OCTOBER 1909

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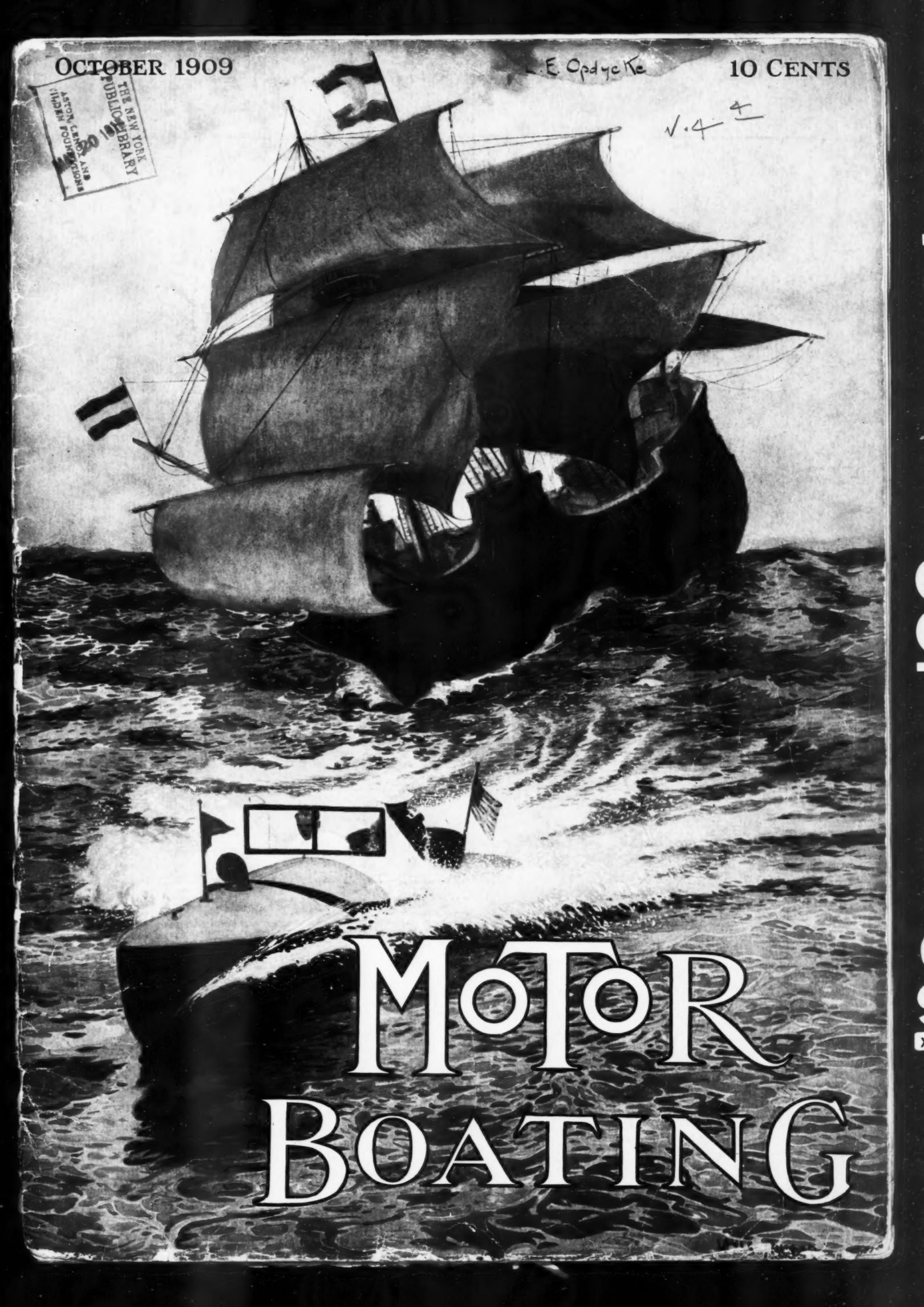

MOTOR BOATING

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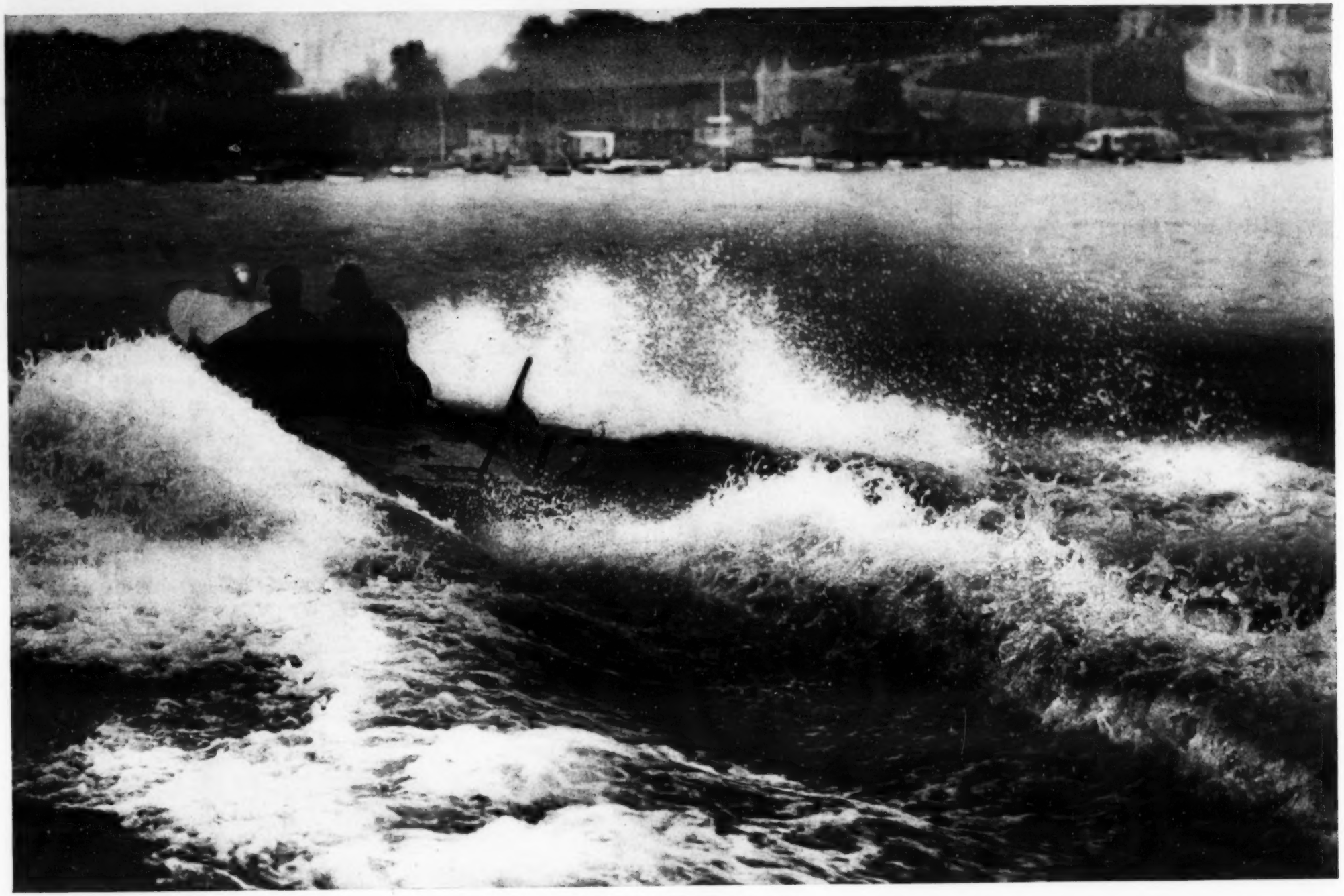


Churning it up.—Hadajr in the Hudson River races.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

The National Motor Boat Carnival.

The Annual Races of the M. B. C. A. and N. Y. M. B. C. on the Hudson. Short and Long Distance Contests and a New Record.

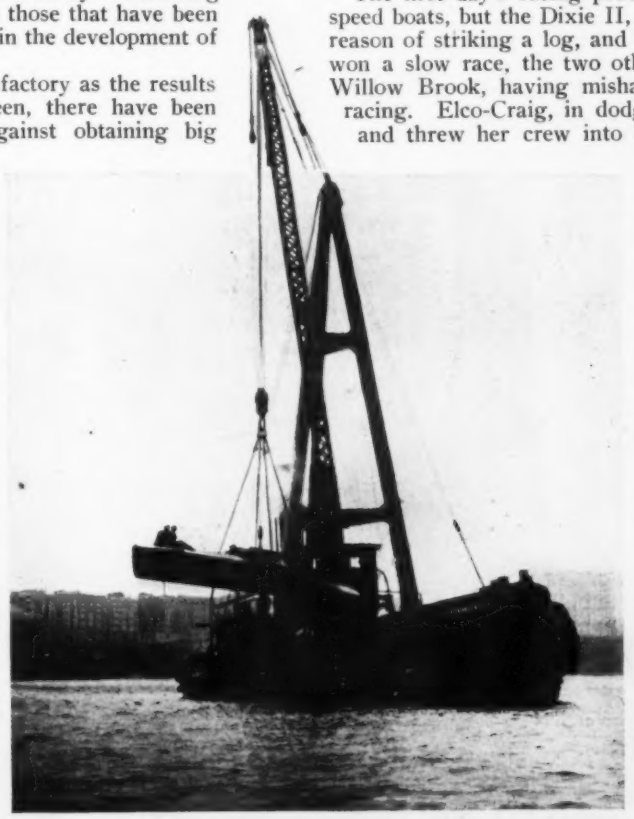
By M. C. Erismann.

THE Motor Boat Club of America in the fall of 1905 inaugurated a motor boat carnival which has been one of the regular fixtures of the season of motor boating ever since. These races have been run under the auspices of a club or clubs for cups and trophies offered by various manufacturers of motors. For a time it appeared that very little interest was manifested in these races apart from the manufacturers themselves, as it was supposed that a private owner stood no chance of winning. However, in the successive years the carnival has developed—not without a fair amount of convulsions and disagreements—as the sport has been better understood, motors perfected, hulls better designed and the machinery of the clubs undertaking the running off of races made more efficient. The results shown by the meeting just ended are most gratifying to those that have been interested workers or enthusiasts in the development of this sport.

It must be confessed that, satisfactory as the results of the present meeting have been, there have been causes which have militated against obtaining big fields. The causes are extraordinary and ordinary. Of the first class the Hudson-Fulton celebration has been responsible for a number of absentees from the racing, the celebration including races in New York and at Newburgh. Without question many owners of eligible power boats were unable to appear—reserving for the celebration the last days of their vacation, to witness a great pageant. The ordinary cause was one far more common than the great anniversary of Hudson and Fulton, and it is one that reaches all places where men of boating and yachting tastes gather. The great thing to obtain in the pursuit of the sports of motor boating or yachting is time—leisure sufficient to be absent from one's business. The all-too short vacations are, by the time Labor Day is past, exhausted, and the most enthusiastic must go back to the grind.

So it is the ordinary causes which take much from the success of the meeting, taking place as it does at the end of the season. The one reason for holding it so late is that the boats starting are in good condition after a season's tuning up and the results are correspondingly satisfactory. The races this year were held on September 15, 16, 17 and 18, under the auspices of the New York Motor Boat Club and the Motor Boat Club of America, and the courses were laid off on the Hudson River opposite the club house of the New York Motor Boat Club. The weather conditions were good, with the exception of the first day, when the river was rough. The measuring of the boats was done in good time and the race committee acquitted themselves well in starting the races promptly.

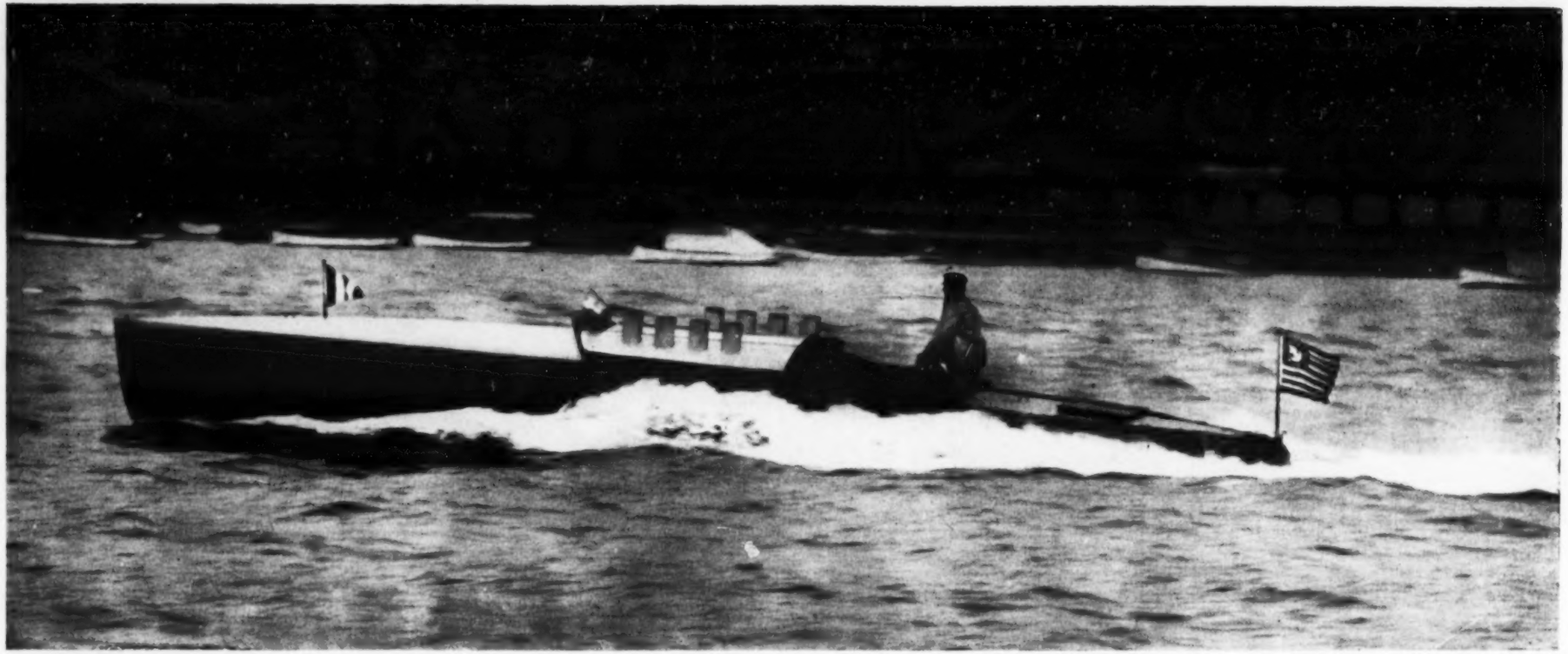
The first day's racing proved to be eventful for the high-speed boats, but the Dixie II, though in trouble at the start by reason of striking a log, and being delayed some six minutes, won a slow race, the two other competitors, Elco-Craig and Willow Brook, having mishaps which put them out of the racing. Elco-Craig, in dodging a log at high speed, upset and threw her crew into the water. The two men were promptly rescued as were also the crew of Willow Brook which filled and sank through losing a hatch cover. In the other classes the racing was more nearly normal and devoid of accidents.



Fishing out Dixie II to make repairs after the accident.

The second day's racing brought out seventeen contestants. Dixie II was alone, as her two competitors were still, owing to accidents, unable to start. Dixie made 29.03 knots average speed without great effort.

The third day's racing was interesting—Dixie II having no competitors, bettered her previous time over the thirty-mile triangular course, having covered it at the rate of 32.23 knots or 37.064 statute miles per hour. This speed is superior to that which Dixie made on August 4, 1905. Dixie holds the International Cup for another year. Rochester wins the Inter-State Trophy. Avis wins the Motor Yacht Trophy and Talequah won in "G," cruising class.



"In Dixie II we have a boat to be proud of." She made a new record of 32.23 knots.

Elco-Craig.—She hit a log on the first day.

National Motor Boat Carnival—First Day's Racing.

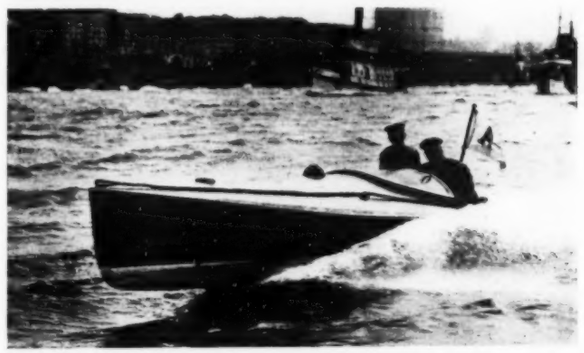
High Speed Boats—Class C, 12 metres. Course, 30 miles. Start 3:10.

Boat.	Owner.	L. O. A.	Rating.	Finish.	Elapsed Time.
Dixie II.	E. J. Schroeder	39.32	.....	4.24.34	1.14.34
Elco Craig.	Sutphen and Craig	39.4	.....	Struck log	
Willow Brook.	W. H. Moffit	35.0	.....	Disabled	

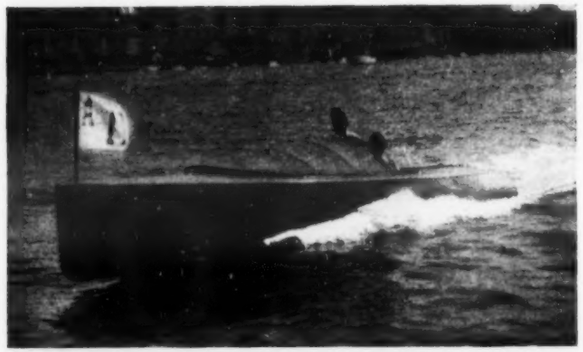
High Speed Boats—Class A, 33 feet and under. Course, 30 miles. Start, 3:15.

Vim.	G. F. Baker, Jr.	25.00	74.70	4.51.36	1.36.36
Den.	J. H. Hoadley	31.10	74.16	4.44.27	1.29.27
Whim.	R. E. Vanderhoff	24.10	67.30	4.51.55	1.36.55
Rochester.	W. J. Graham	24.10	70.04	4.54.29	1.39.29
Hadajr.	H. Darlington, Jr.	21.60	64.80	4.52.23	1.37.23
Racine.	A. M. Probst	.....	.....	Not timed	
Kitty Sparks.	C. Furthman	.....	.....	Withdrew	
Artful.	H. Coons	.....	.....	"	

Corrected times: Hadajr, 1:22:04; Whim, 1:25:55; Den, 1:28:47; Rochester, 1:32:44; Vim, 1:36:36.



Den.—Second in Class A and winner of the Poughkeepsie race.



Rochester—a new 24-footer.

National Motor Boat Carnival—First Day's Racing—Continued.

Cruising Boats—Class D, 60 feet and over. Course, 20 miles. Start, 3:20.

Boat.	Owner.	L. O. A.	Rating.	Finish.	Elapsed Time
Avis	F. C. Havens	65.0	64.04	4.54.19	1.34.19
Alabama	J. H. Hoadley	71.08	60.12	5.03.23	1.43.23
Wanderlust	E. J. Steiner	.....	68.00	5.07.20	1.47.20

Corrected times: Avis, 1:34:19; Wanderlust, 1:37:28; Alabama, 1:38:12.

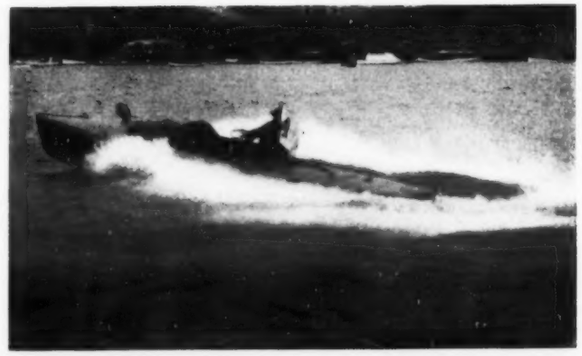
Cruising Boats—Class E, 40 to 60 feet. Course, 20 miles. Start, 3:25.

Ilys	J. G. N. Whittaker	.....	.....	5.36.58	2.11.58

Class G—Open launches. Course, 20 miles. Start, 3:25.

Foxy Quiller	W. Vintschger	25.0	46.8	5.45.57	2.10.57
Bunk II	C. Firth	26.0	41.8	5.57.26	2.22.26
Kit Kat	F. D. Gheen	.....	41.55	6.06.40	2.31.40
Imp	A. Haas	19.105	35.4	6.22.32	2.47.32
Talequah	W. H. Niles	20.40	33.3	5.54.39	2.19.39
Melannie	R. H. Koehler	21.3	28.58	6.56.15	3.21.15

Corrected times: Talequah, 1:36:20; Bunk II., 2:09:38; Foxy Quiller, 2:10:57; Imp, 2:13:07; Melannie, 2:13:15; Kit Kat, 2:18:00.



Vim—a consistent performer.

Start of Class A on the first day.

Pretty well bunched.

On Saturday, September 18, the long-distance race to Poughkeepsie was run off. This event of the carnival has always been attractive and as usual brought out a good number of starters. The course is 115 miles, for high speed and cruising boats over 40 feet. For cruising boats 40 feet or less, the course was to Peekskill, 60 nautical miles. The race started just before ten. The river was rough but ideal to show the boats under service conditions. There were a number of withdrawals but nevertheless the showing was very creditable. The fleet was divided into three divisions with a total of 28 boats (7 of which started for Poughkeepsie and 21 for Peekskill), of which 17 finished.

The results of the carnival are entirely satisfactory and show that progress is being made in the direction of perfecting both engines and boats. The cruising boat was greatly in evidence, which attests its popularity and practicability for pleasure purposes.

From the racing point of view it would seem that in Dixie II we have a boat to be proud of, and so far her title to being the fastest motor boat has not been ques-

Second Day's Racing.

High Speed Boats—Class C, 12 meters. Start, 2:40. Course, 30 miles.

Boat and Owner.	Finish. H.M.S.	Elapsed Time. H.M.S.
Dixie II, E. J. Schroeder	3.42.15	1.02.15

High Speed Boats—Class A, under 33 feet. Start, 2:45. Course, 30 miles.

Vim, G. F. Baker, Jr	4.12.24	1.27.24
Den, J. H. Hoadley	4.15.30	1.30.30
Rochester, W. J. Graham	4.27.31	1.47.31
Hadajr, H. Darlington, Jr	Withdrew	
Racine, A. M. Probst	Disabled	
Whim, R. E. Vanderhoff	Disabled	

Corrected times: Vim, 1.27.24; Den, 1.29.50; Rocvhester, 1.40.51.

Cruising Boats—Class D, over 60 feet. Start, 2.50. Course, 20 miles.

Avis, F. C. Havens	4.22.02	1.32.02
Alabama, J. H. Hoadley	4.29.45	1.39.45
Wanderlust, E. J. Steiner	4.38.26	1.48.26

Corrected times: Avis, 1.32.02; Alabama, 1.34.34; Wanderlust, 1.38.34.

Cruising Boats—Class E, 40 to 60 feet. Start, 2.55. Course, 20 miles.

Ilys, J. G. N. Whitaker	5.05.59	2.10.59

Open Boats—Class G. Start, 3.05. Course, 20 miles.

Foxy Quiller, W. Vintschger	5.14.11	2.09.11
Bunk II, C. Frith	5.26.32	2.21.32
Kit Kat, F. D. Gheen	5.17.13	2.22.13
Imp, Arthur Haas	5.35.45	2.31.05
Talequah, H. H. Miles	5.17.20	2.12.20
Melannie, R. H. Koehler	6.16.22	3.06.22

Corrected times: Talequah, 1.29.01; Imp, 1.56.40; Melannie, 1.58.22; Kit Kat, 1.58.33; Bunk II., 2.08.44; Foxy Quiller, 2.09.11.

At the turn.

Den negotiating a turn.

Third Day's Racing.

Class C—High speed boats, 12 meters. Start, 2.05. Course, 30 miles.

Boat and Owner.	Finish. H.M.S.	Elapsed Time. H.M.S.
Dixie II, E. J. Schroeder	3.00.50	0.55.50

Class A—High speed boats, under 33 feet. Start, 2.15. Course, 30 miles.

Vim, J. F. Baker, Jr.	3.47.16	1.32.16
Rochester, W. J. Graham	3.55.46	1.40.46
Whim, R. E. Vanderhoff	Did not finish	
Den, J. K. Hoadley	3.45.11	1.30.11

Corrected times: Den, 1.29.31; Vim, 1.32.16; Rochester, 1.34.06.

Class D—Cruising boats, over 60 feet. Start, 2.20. Course, 20 miles.

Avis, F. C. Havens	3.52.34	1.32.34
Alabama, J. H. Hoadley	3.59.57	1.39.57
Wanderlust, E. J. Steiner	4.06.01	1.46.10

Corrected times: Avis, 1.32.34; Alabama, 1.34.46; Wanderlust, 1.36.18.

Class E—Cruising boats, 40 to 60 feet. Start, 2.25. Course, 20 miles.

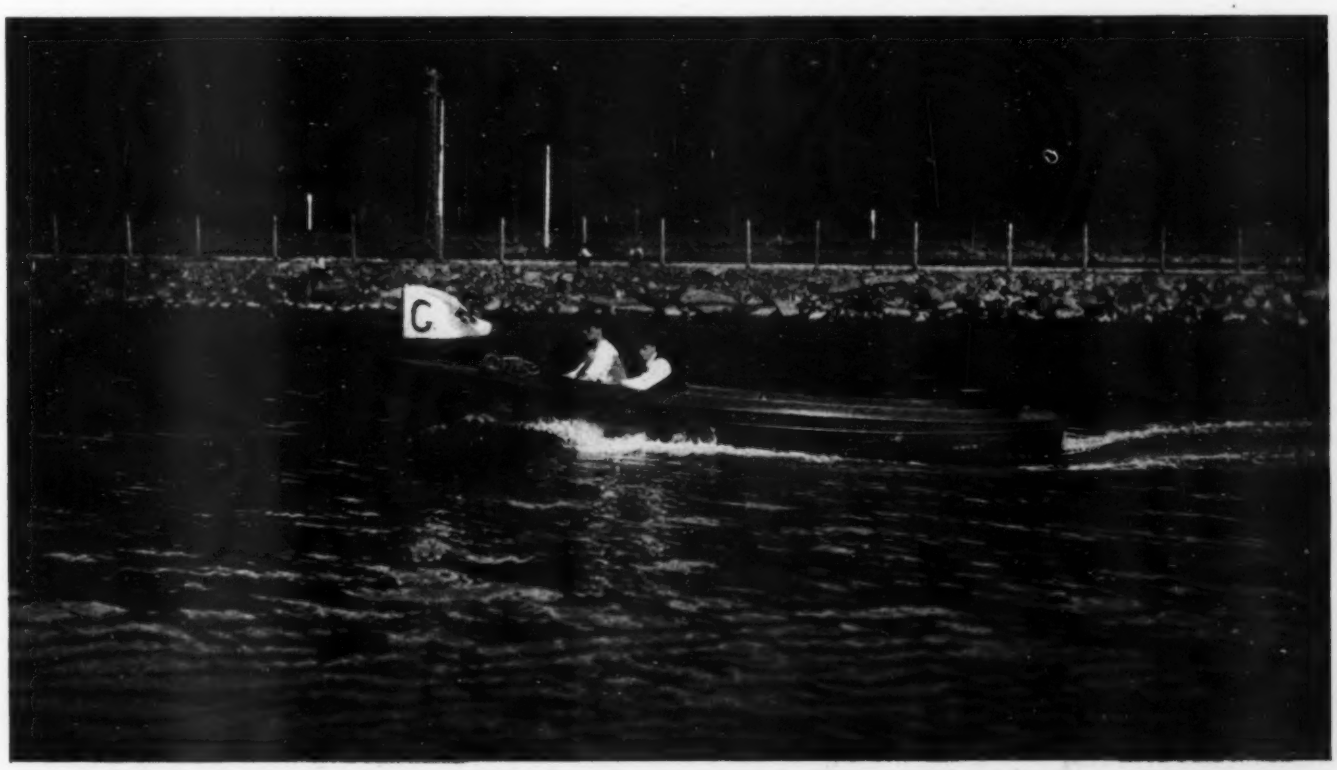
Ilys, J. G. N. Whitaker	2.06.56	2.06.56

Class G—Open boats. Start, 2.25. Course, 20 miles.

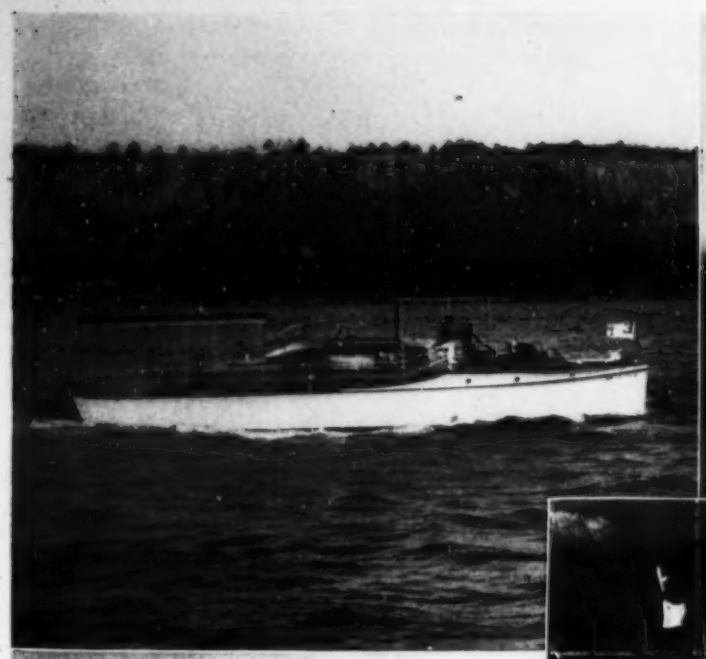
Talequah, W. H. Niles	5.54.52	2.19.52
Imp, Arthur Haas	5.00.57	2.25.57
Melannie, R. H. Kochler	5.46.00	3.11.00

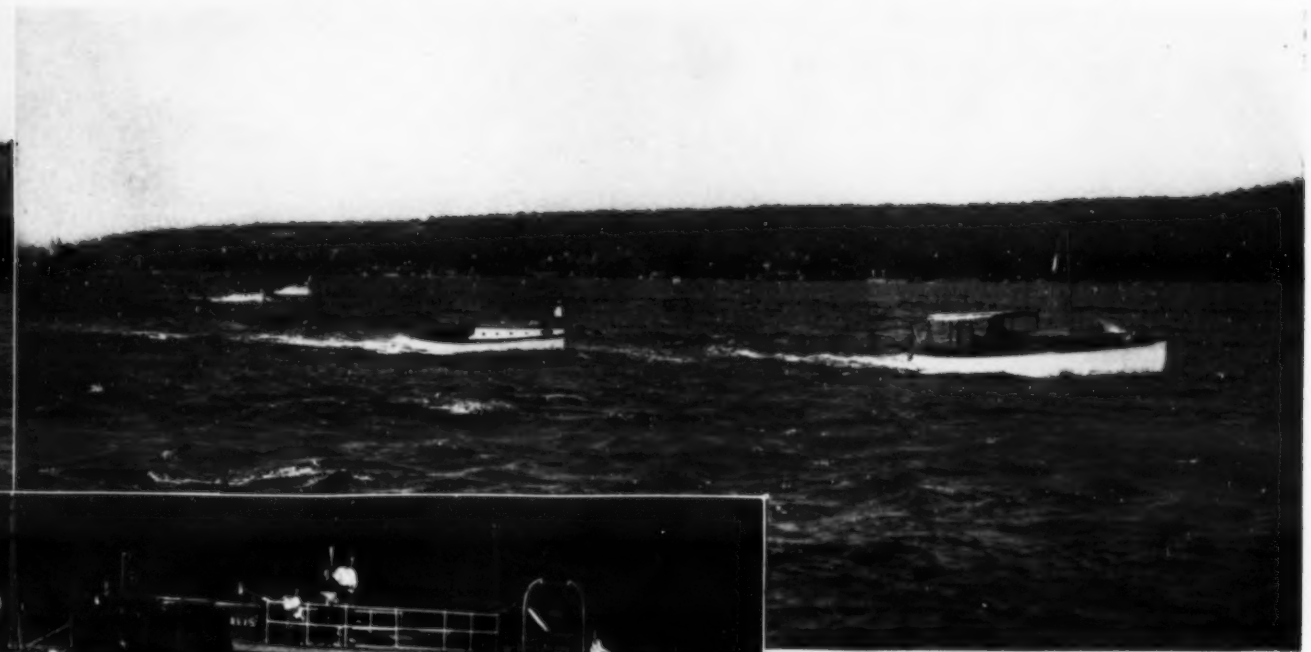
and this dimension was decided upon at a conference of representatives of the organizations of France, Switzerland, Italy, Germany and England. This conference agreement has yet two years to run. The failure of the English boat to challenge for the Harmsworth Trophy this year is traceable to the reluctance to build a boat to race especially in America. Some arrangement ought to be made in order to keep pace with what is going on abroad. There is room for larger boats and plenty of brains to produce boats worthy to defend or challenge anything in the 15-meter class. Now is the time to get the experience. It has been fortunate that the very high-speed racing has lain dormant for a year, for it has permitted the tioned. That Dixie II should be a 12-meter boat does not signify much in relation to our own motor boating or racing, for the fast boats have been truly reluctant to appear in competition with her for one reason or another. In European racing the maximum length is 15 meters

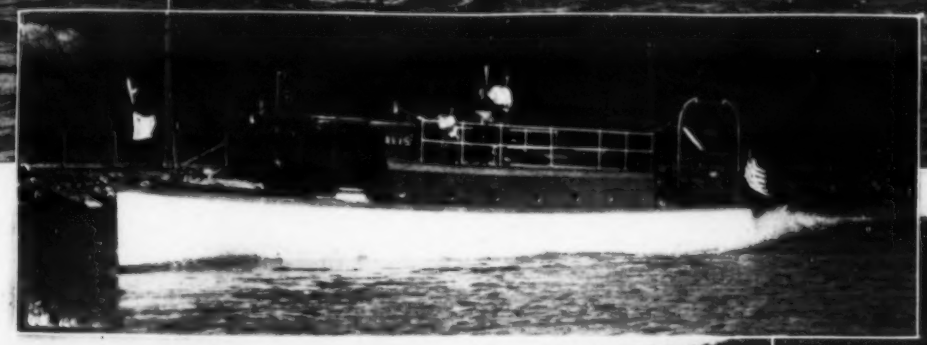
(*Continued on page* 50).

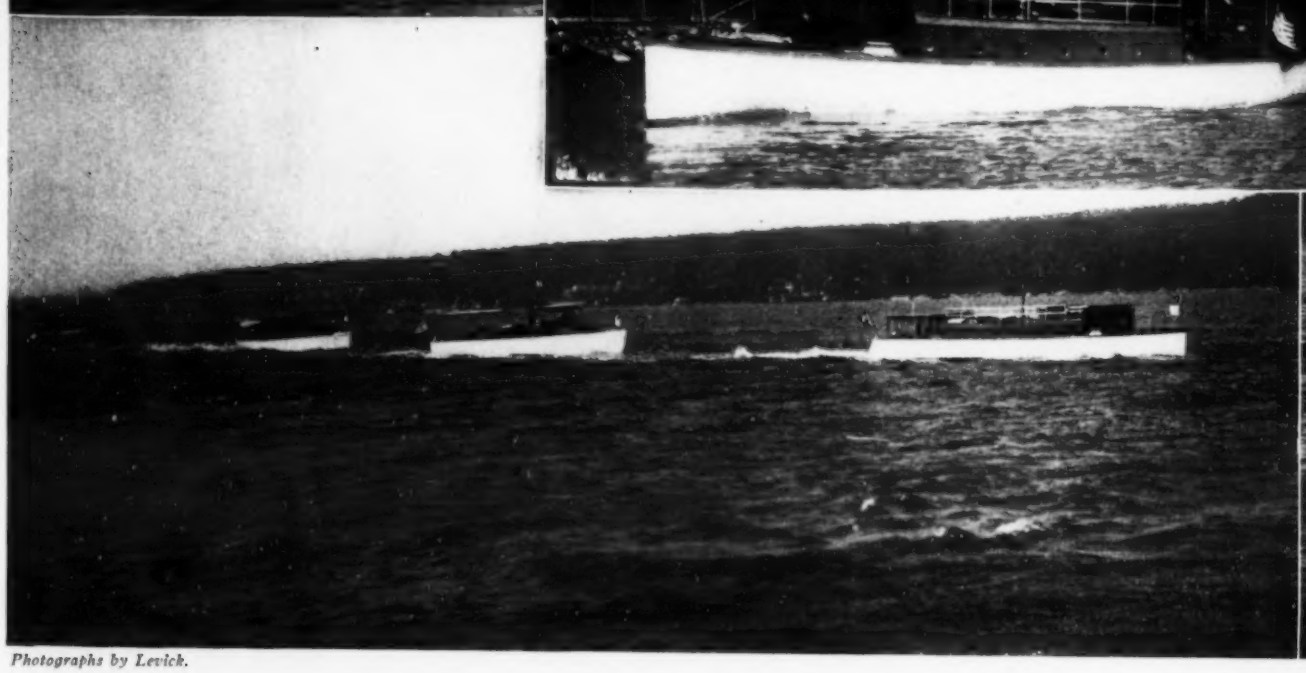


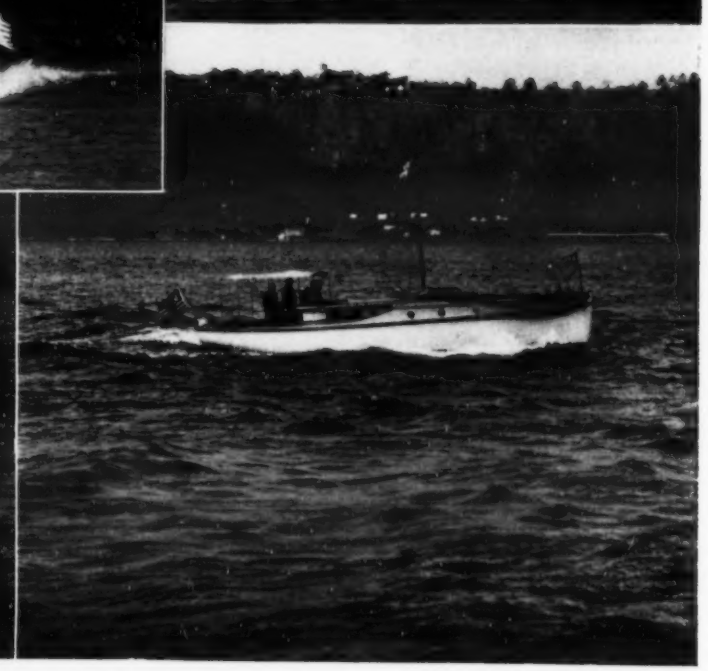
Talequah.—Winner in Class G.







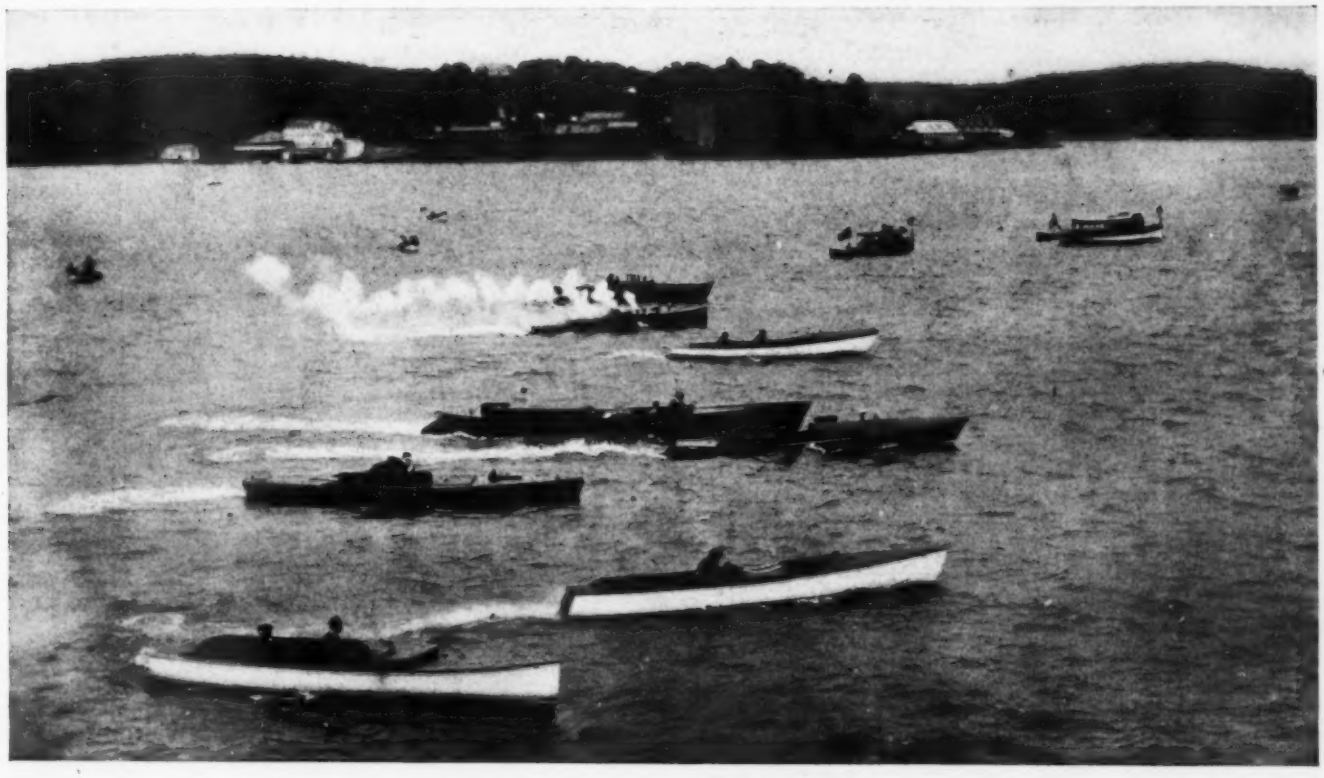




Photographs by Levick.

The long distance races up the Hudson for cruising boats.

At the left above is Ilys, winner in the class for boats over 40 feet, and at the right, contestants in the 40-foot class strung out after the start. Below at the left, the big boats "stretching out" and at the right, Irene II, the 40-foot winner. In the center is Avis, the first to finish.



Start of the 30 mile handicap subscription race.

Motor Boating in the Watchung Mountains.

Hopatcong—"A Lake That May Well Be Called a Paradise for Motor Boatmen." An Account of the Season's Racing and Motor Boat Events.

By S. M. Meeker, Jr.

Photographs by Harris.

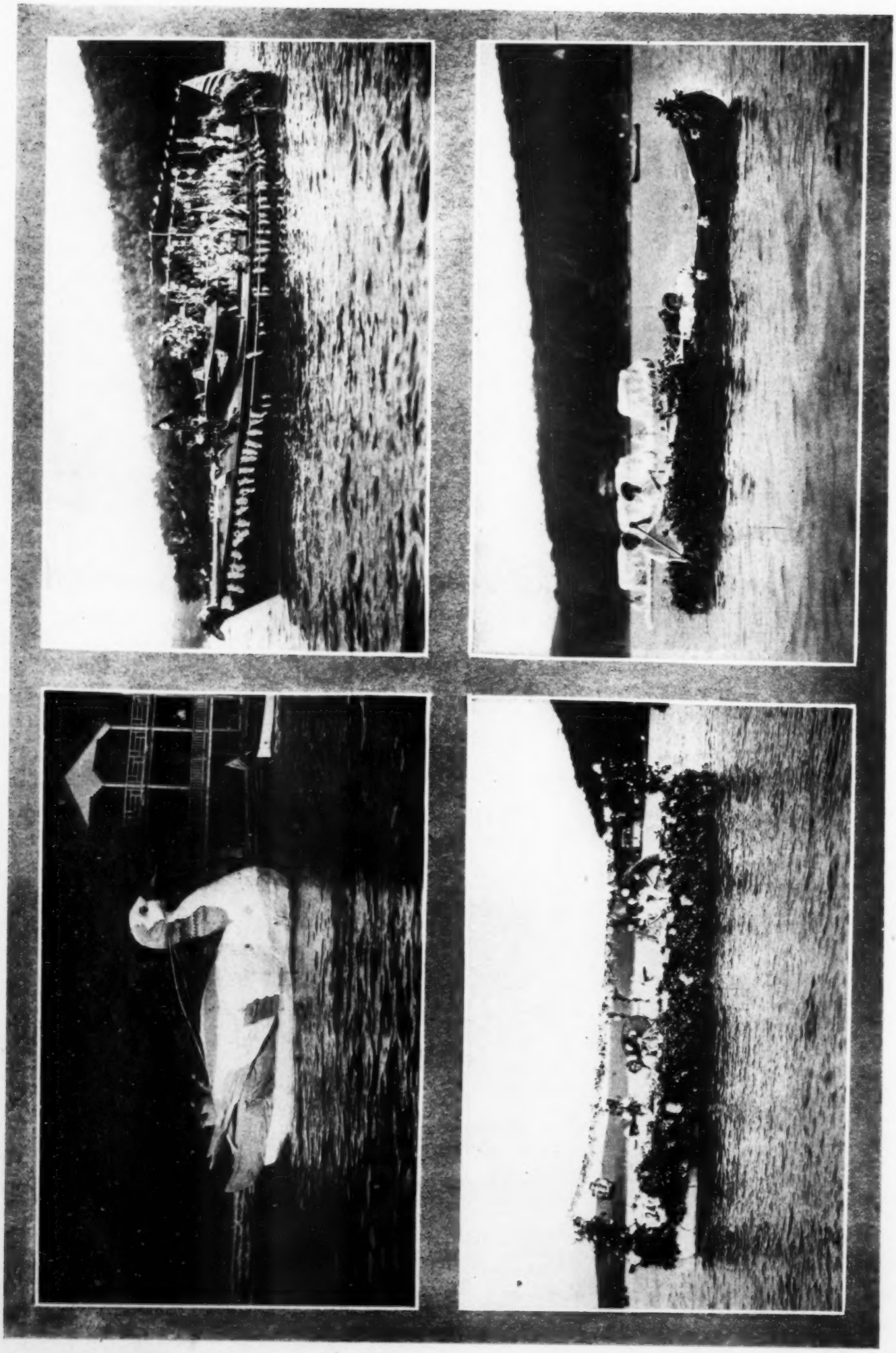
UP in the Watchung Mountains of New Jersey, 926 feet above the level of the sea, lies a lake that may well be be called a Paradise for motor boatmen. Here are all the requisites for a pleasant summer to be spent running about in a motor boat—crystal-clear water, well-wooded shores, with interstices of gently sloping meadowland, the picturesque sky line of the surrounding hills, and charming water vistas of new arms of the lake which open up to view as the boat speeds around the many points of land. Lake Hopatcong, this natural home of the motor boat, is not a large lake, measured by its greatest length, but its shore line is 66 miles around. The lake is peculiar in its shape, somewhat like the imprint of a bird's claw, with long arms branching off which seem to divide it into several separate lakes.

Lake Hopatcong is only 46 miles from New York City, within easy commuting distance. Most of the commuters live in the pretty cottages that are dotted everywhere along the shores of the lake, and they rely mainly upon motor boats to get to the train at the landing. In fact, as the road only goes part way around the lake, very many of the summer residents are absolutely dependent upon their faithful family launch or speedy runabout, as the case may be, for the twice-a-day run to the train, calling, and pleasure trips, for the only possible means of transportation for them is by water. Under these circumstances, it is not surprising that there were said to be 450 motor boats in use on the lake this season.

The Lake Hopatcong Yacht Club is an organization with a history. Back in the days when the lake first began to be popular as a place for summer sojourning, the club was formed for sociability and to conduct sailboat and canoe races. These are still kept up, and arouse much interest, but of course in the last four or five years the gasolene engined boats have held the front of the stage. The club now has 212 members, almost all of whom are motor boat owners.

At "Wildwood" boat house before a race.

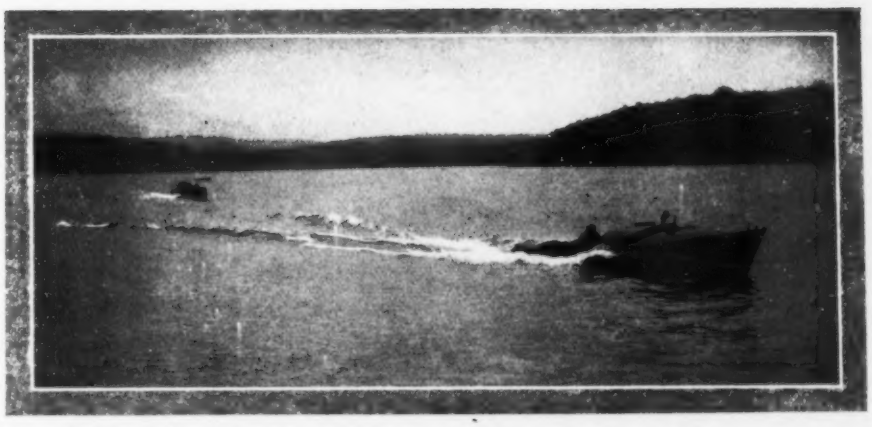
All the motor boat races are run over a regular club course, a six-mile triangle surveyed



Participants in the day carnival, an annual event held by the cottagers at Lake Hopatcong.

on the ice. The club recognizes three classes: A, boats making 15 miles an hour or better, cover 30 miles. B, boats doing over 10 and under 15 miles per hour, race 18 miles. The Class C boats, doing less than 10 miles an hour, go one round, six miles. In the handicap races any boat which exceeds her trial speed by more than two per cent. is disqualified.

The 1909 season of the Lake Hopatcong Yacht Club opened July 3, with a race for Class A. On this day the lake was extremely rough, and the only boats to finish were James Simpson's Peter Pan II, first, and A. King's Gibson Girl, second. This gave Peter Pan II possession of the club's speed championship flag.



Barbara II drawing away from Peter Pan II in the last race of the season.

On the evening of July 24, the annual night carnival and marine parade took place, and this event was an unqualified success. The myriad lights on the boats and docks made the lake look like a fairyland. The day carnival and boat parade was held on August 7. The cottagers take a great interest in these carnivals, and no pains are spared in the search for novel decorative effects in the pageant. The illustrations show the surprising transformations undergone by some of the motor boats.

Peter Pan II. A most consistent performer.

The annual handicap regatta came on July 31, and the race for the Edward Belknap cup on August 14. W. H. Barron's San Toy III won both of these races in Class A.

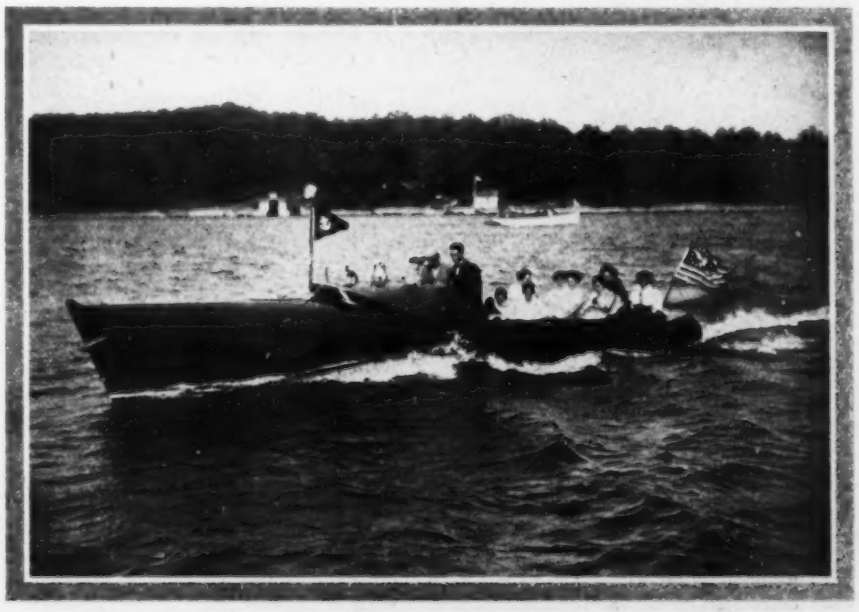
August 28 was an important date in the Lake Hopatcong calendar, for on this day came the 102-mile endurance race, 17 laps, all boats starting scratch. Seven boats crossed the line together, off "Wildwood," at the boat house of ex-commodore Edwards, who was commodore at that time. It is the rule to have all races start and finish at this dock. After a magnificent race, the first four boats finished as follows:

Peter Pan II, 4 h. 42 m. 48 s.; Barbara II, commodore-elect P. B. Bird, 4 h. 50 m.; Roselynn, E. A. Morey, 5 h. 38 m. 51 s.; Red Raven, P. S. Saitta, 5 h. 42 m. A little story about ex-commodore Edwards, owner of Arellee, will serve to show the spirit shown by Lake Hopatcong yachtsmen, and the interest in the long distance race. The Arellee broke a valve the night before the race, and no replacement could be had. Commodore Edwards made a trip to the Landing in the middle of the night, flagged a through express from Buffalo to New York at 3 in the morning, went to New York and purchased a new valve, engaged a special locomotive to bring him back to the lake, where he made repairs, and then started in the race, but unfortunately too late to have any chance.

The last big event of the season was the 30-mile handicap subscription race of September 4 for Class A boats. To anticipate a little, Roselynn won the race on corrected time, with Red Raven second, but the real interest lay in the struggle between Barbara II, the little flyer of the new commodore, P. B. Bird, and James Simpson's speedy Peter Pan II. These two boats started scratch, on even terms, and a royal fight to the finish was expected. Peter Pan II had held the speed championship flag throughout the season, but the two rivals had never yet met in a race without some mishap occurring to prevent a fair test of their respective merits.

On the afternoon of September 4 there was blowing a small gale, seasoned with rain, which stirred up some lively waves on Lake Hopatcong. The eight boats danced about on the line, backing and running ahead, and at the gun the bunch got off to a pretty start. Barbara II gathered speed immediately and leaped ahead of Peter Pan II. She demonstrated her superior speed by drawing well away from Peter Pan on the first lap, and then held her lead safe. Around and around they went, five times around the triangle, plunging through the waves, scattering spray as they smashed through the big ones, and leaving a white foamy trail behind them. Through it all each boat ran as consistently and evenly as clockwork. The heavy weather and the crucial turns at the marks required steering of a very high order. It was one of the prettiest races ever seen on any course. The other boats were forgotten in the anxiety to see what the two leaders were doing. Peter Pan scooted along close on Barbara's trail, but never able to gain on her or catch her. The boats finished the 30-mile race with only four and three-fifths seconds between them, which is pretty close work, especially in half a gale. Barbara's time was

(*Continued on page* 48.)



Red Raven. A typical fast runabout of generous capacity.

Leonora—a comfortable forty-three-footer.

Leonora—A Craft of Note.

TO provide genuine comfort in a forty-footer is one of the real problems of motor boat design. The essentials are so numerous, their necessary proportions so decidedly fixed and the space available so small comparatively, that when a successfully worked out craft of this class is found she proves of double interest to those who have given the subject thought. Such a boat is Leonora, of which the photographs and plans herewith show the construction and general arrangement. She was designed and built for John Atkins, of New York City, by Frederic S. Nock, of East Greenwich, R. I., and her general dimensions are as follows:—Length over all, 43 feet; length waterline, 38 feet 4 inches; breadth extreme, 10 feet; draft under shoe, 3 feet 1½ inches.

Keel, stem, deadwood, etc., are of oak, sided 4 inches, frames of oak 1⅝ x 1⅝ inches, spaced 9 inches center to center. The clamps, bilge clamps and shelves are of yellow pine and of ample dimensions. The planking is of cedar, 1 inch thick and is copper fastened. The deck is of white pine 1 inch thick, while the top of cabin trunk and raised deck are of ⅞-inch cypress covered with canvas.

The exterior bright work is oak and mahogany, and the sides of the cabin trunk, sash, companionway doors, etc., are of mahogany.

The interior finish is as follows:—Engine-room of staved oak; saloon, alcove and toilet-room of paneled oak; forward stateroom, white enamel and mahogany trim. The plans show the general arrangement of the interior.

In the forepeak there is a copper gasoline tank of about 120 gallons capacity. This tank is set in a copper pan and made to drain overboard. Aft of it there is a water-tight bulkhead, and the forward stateroom, containing two berths, bureau, dresser, lockers, etc.

The toilet-room is situated on the port side, and there is an opening from the stateroom or from the alcove. Opposite the toilet-room on the starboard side is the forward companionway. This admits of access to the forward part of the boat or saloon without passing through the engine-room if so desired.

The main saloon is arranged with berths of the extension type capable of sleeping four persons, lockers, buffet and extension table.

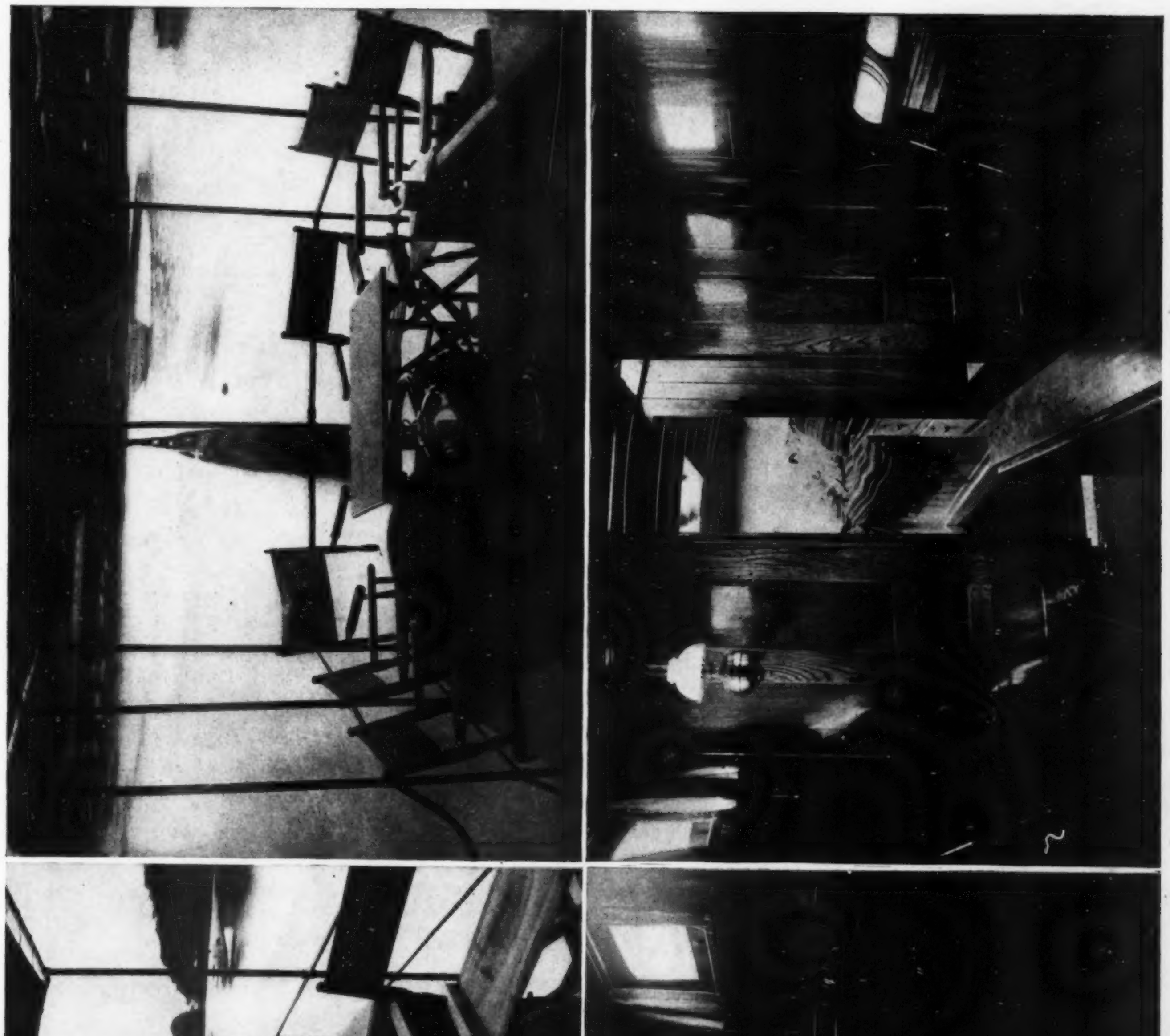
The engine-room is arranged with a galley on the starboard side, sink, stove locker, provision lockers, and under the deck aft is situated a good sized ice-box. On the port side there is a Pullman berth built in the side for use of the engineer, and under the steps there is ample stowage space for oil cans, chairs and other dunnage.

Under the after deck there are two 40-gallon water tanks and a 40-gallon tank for compressed air, besides ample room for the stowage of life belts and other things.

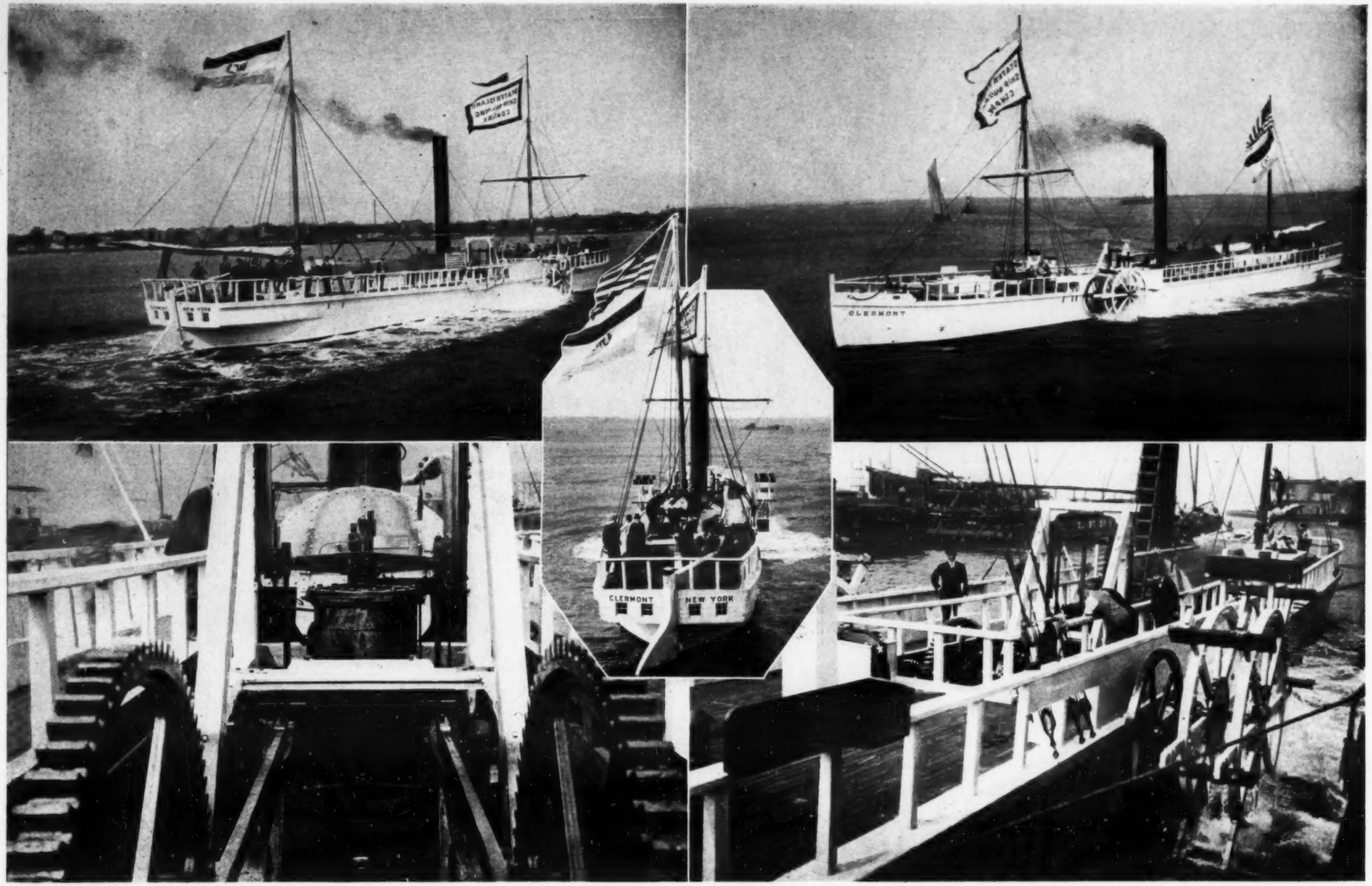
The engine is a 3-cylinder 18 h. p .Standard.

Looking toward the bow in the forward stateroom.

The three-cylinder, 18 h. p. Standard.



Leonora—Deck and cabin views. See plans on page 38.



Photographs by Levick.

The first practical application of mechanical power to vessels.

The reproduction of Robert Fulton's Clermont, the first vessel propelled by mechanical power to go into regular service, has been built to take part in the Hudson-Fulton celebration in New York, September 25th to October 2d.

Hints On Motor Boat Navigation.

Part V—Night Running.

By George S. Goldie.

NIGHT running is fascinating to many and disturbing to others. To enjoy it one should train the eye and faculty for comparison of distances and angles. In the daylight we are constantly working by comparing one object with another and by seeing the different lights and shades. Without the aid of shades and shadows, and comparing the sizes of objects, the one with another, which is, for the most part, done unconsciously, our ability to judge distances would be greatly restricted.

A distinct shadow is absent at night except when the moon is shining, but the different shadings can be made out on all but the darkest nights, and distances can be judged fairly well by knowing the angle of one light from another. To familiarize one's self with conditions on the water at night quickly, the charts and the distances of lights from each other should be studied, until the whole is imprinted on the mind. The necessity for taking bearings and soundings during good weather is then very nearly done away with.

For practice we shall fill and trim the starboard and port lights and set them, being careful that the glass is clean and clear and that the lights are elevated above the rail and not too close to its edge; then do the same for the bow and stern lights, placing the latter at such an elevation above the bow light that it will be clear and distinct from it, forming a perfect range and so placed that it can be seen clearly by an overtaking vessel. Upon casting off our lines, if moving from a dock, we shall pull one bell and blow a long blast to indicate that we are under way, the "jingle" not being given until we are out from the fleet and in clear water.

Quickly we glide over the glassy surface through the tortuous channel leading from Plymouth, Mass., and faster yet falls the evening pall. With our best speed we hurry to make the last turn that brings us paralleling the long sandspit (Long Beach) that helps to form the harbor. In the dim light its form is fast becoming indistinct, yet we must hug it or we shall be on the sand flats that are all too close for comfort on our port hand and lying but a foot below the surface.

Ahead, a little off the starboard bow, is the Duxbury Pier lighthouse marking the eastern edge of the harbor's entrance. Between it and the sandspit is a few hundred yards of water. To be sure of paralleling the spit we lay a course for an imaginary spot about 300 yards to the west of the light and hold it until the light bears five points off our starboard bow; by that we know that the sandspit is well on our starboard quarter. We then swing to starboard until the light is broad off (4 points) our port bow. We are now in the open as far as being without shelter goes, but have a long shoal (Brown's Bank) that bares at low water on our starboard and a great sand flat which extends a half mile from the shore on our port. Nearly three miles away are the Gurnet lighthouses showing white lights. They are on a high bluff. Heading easterly and laying a course to pass a half mile to the south of these lights we speed our way until brought to a standstill by fouling a mass of floating weed which causes a man to strip to the waist and hang over the stern while others hold him by the ankles.

Well do I remember beating in through the place for the first time one night over twenty years ago. It was a sloop and the wind was strong from the west. Flying clouds were crossing the moon, and a heavy easterly swell was breaking on the long shoal. Over on the starboard tack we lay until the breakers crashed loud close aboard. Away on the port tack we rushed until the inner light bore W ½ S; then for the breakers; back for the bearing and all the while seven grown men praying and begging that I let go the anchor somewhere and save them for their families' sakes, till finally we bowled by the inner light where I let it go in peace.

Right here is a good illustration of the benefit derived from studying the chart well. As we approached the light one of our men worked a hand siren vigorously; the keeper appeared at a window. As we passed close below I asked, "How far in can we go?" Knowing the distance could not be great. "As far as you like; good water!" came the answer. The keeper undoubtedly knew the water and perhaps gave the reply under the impression that we were bound up to the northward for the "Cowyard," a good harbor for moderate draft vessels. But our destination was Plymouth, and its channel is an impossible one for strangers at low water at night.

The chart told me otherwise about the depth of water, but being 1/80,000 scale, it was not so clear and definite as a local chart would be. I therefore brought the sloop into the wind and dropped anchor, after a very short run, on the edge of a sand bank that would have heeled us badly as the tide dropped.

On another occasion while entering Branford Harbor, Conn., a launch skipper, seeing me watching a chart, and the rocks, while at the wheel, warned me with frantic gesture and voice to alter my course. The chart being local and very clear, I held on straight over the spot which he had probably been told had shoal rocks. I thanked him for his kindly intentions, but relied on the chart. By "charts" I mean the U. S. Government charts, of which those to 1/10,000 and 1/5,000 scale give the bottom in great detail.

Safety in night running depends mainly on a study of the chart, and the comfort the result of this study gives repays a hundred fold for the time expended. In finishing one of the Marblehead Races a gas-buoy was pointed out, by some of those on board who were supposed to know the locality well, and we ran for it. I soon saw from its angle with Execution and Sands Point lights that it simply could not be the twinkler off New Rochelle and altered the course to bring Execution and Sands Point lights to bear properly, knowing that no matter how dimly the twinkler was showing with those lights right, it must soon be picked up. And so it was. This shows the benefit of the chart studying which I had done.

But to get back to the main story. After clearing the weed from our wheel, we held the course E ½ N for the Gurnet Whistler. It is now getting quite dark, the night is creeping stealthily forward from the east, shrouding the water until that pall of mystery penetrates to the inner man, despite his feeling of confidence and self-asserted unconcern. Before reaching the whistler all objects are blotted from our vision, even the promontory on which stand the lights has faded into the overspreading veil.

We are running for the buoy, but do not wish to hit it. We can tell of our arrival in its vicinity by maintaining a sharp lookout when we are approaching the bearing which will bring the Gurnet lights the opposite, or, N W x W ½ W from us, as it bears S E x E ½ E from the Gurnet lights. There being no sea on, the whistle is silent.

When searching for a buoy at night do not stand up; the higher one is the more the form of the buoy mingles with the general shade of the water. Rather lean over the side, getting the head as near the water as possible; then the line of vision projects the form of the buoy against the sky line or against something with which it does not blend so readily as with the water. Shut out all lights between yourself and forward. If using a searchlight it must be kept sweeping, for it has the effect of blinding the eye to everything outside the circle of its rays. If using it from the after end of the cabin house have it elevated so it will not throw any light on the cabin roof or the forward part of the boat, as such a light obstructs the vision. It is for these reasons that the pilot house of a steamer is generally kept dark and that there is no light forward that can be seen by the pilot.

In this case our precaution was well taken; we would have struck the buoy fair in the center, and we sheer in time to clear it by only a few feet.

Our course is now E x S, for Wood End light on Cape Cod. A faint breeze from the northeast begins to ripple the water and it is not long before the boat is swinging strongly on the seas which are running from a few points off our port bow, causing the compass to oscillate freely. It is a long run across the bay and to make our course good we are obliged to keep putting a finger on the compass and tip it enough to make the dial stick, endeavoring to do this when the point we are steering is opposite the lubber line. Upon releasing the compass it is watched closely as it begins to swing again and the boat is given enough helm to make the point we are steering, E x S, swing as much to one side of the lubber line as it does to the other. To explain why we do this let us take an example. If the course to be steered is East, and the compass is swinging so that E N E and E S E alternately point to the lubber line, we know the course being held is East, it being midway between the farthest two points which reach the lubber line.

Soon we see over the bow a tiny white light that twinkles at irregular intervals. We watch it to note whether it might be the bow light of an approaching launch as it bobs over the waves; the Race Point light showing as we litt over a swell; or the Cape Cod light. As we advance the light becomes more constantly in view and we soon time it as flashing every five seconds, showing it to be the Cape Cod (Highland) light.

This relieves us from our trouble with the swinging compass, it being productive of better steering to head for any object rather than to use the compass, keeping an occasional eye on the compass to see that the send of the waves or a current is not putting the boat off the course. Here again the ability to carry the chart mentally serves a good turn. We know from the course we are steering that Cape Cod light would show to the North of Wood End light and that it can be seen about eight miles farther, according to theory, but as it is white and the Wood End light is red, it can actually be seen from ten to twelve miles farther. From this must be taken the distance it lies beyond Wood End—about seven miles—making it, that after traveling four or five miles from the time of raising Cape Cod light we should see the fifteen second red flash of Wood End, as we now do. But there is too wide a gap between it and Cape Cod light, which should be open only a little to the Northward. We therefore edge to the Southward until the gap is closed sufficiently and then hold a course that keeps the two lights in the same position.

When nearing Wood End our course is shifted to E southerly, a run that brings us fairly close to the beach.

Ability to see and judge distance at night become of value here. The beach and the land back of it being fairly low, it seems further away than it is, and there is an appearance as of a point projecting into the water

ahead of us, a point with which we never catch up and it requires considerable confidence not to keep sheering off from it. This course we hold until Long Point light bears N E x ¼ N when we shift and steer E N E ¼ N to enable us to clear the black spar at the end of Long Point Shoal.

Some seiners are met bound out and we suppose we are passing them nicely, our starboard lights showing to each other with a wide berth, when I notice the gray shading of one vessel's sails changing.

When taking the examination for pilot, I wondered why the various shades of gray were mixed in with the eye testing colors; and now the actions of that fisherman show me. Though he was yet some distance away when the gray shades of his sails changed I knew that he was swinging on the wind and toward us. His port light is soon in view; then our boat is swung to give him our port light and we soon shut out his starboard light. My feelings may be imagined when presently his starboard light comes out in full bloom. We are still under a port helm and it is too late to swing and give him our green light. We are coming together fast. Our boat has not speed enough to cross his bows. There is but one thing to do. Our helm is jammed harder to port and we make the circle in time to have the after part of his starboard bow pass our stern fifteen feet away.

His maneuvers I cannot understand unless he is the counterpart of a friend of mine who, taking a notion to go on a trip to the banks, shipped as a hand on a Gloucesterman. Soon after leaving Gloucester it came his trick at the wheel, a thing he had never had in his hands before. When he had been standing there for some time the skipper walked up to him and inquired anxiously, "Have you forgotten something in Gloucester, my dear man?" "No, not I," said my friend. "Are you sure?" persisted the skipper. "I cannot think of anything; why?" "Well, I thought you had, as you've got the schooner headed that way."

Before reaching the Long Point Shoal buoy we see a small white light ahead which we think might be a vessel at anchor, yet it is so low on the water it puzzles us, so we give it a fairly wide berth. As we approach there is neither schooner nor boat of any description to be seen about it. This causes us to watch carefully, but with all our care we nearly get snarled up in a "barrel fish net," one of those terrors that are growing so numerous.

Dodging the fish pound causes us to lose our bearing for our run but we pass the spar close to and on the wrong side. From there we go up the harbor N W x N through the fishing fleet to the New York Yacht Club float, where we cast anchor.

It is late on the following night and we start for Marblehead, intending to arrive there in time to turn in before daybreak. To clear Provincetown harbor we reverse the runs that brought us in until the corner at Wood End is turned. Now a course is laid to clear Shank Painters Bar, N W ½ N; another to clear Race Point N x W ¼ W. From Race Point the course is held N E ½ E, 1¾ miles, then E ½ S, 4 miles, for the Peaked Hill Bar whistler, in order that from here the run may be the same as that covered by the racers in the Marblehead.

The course is now N W ⅝ N, 40 miles, and the tide on the first of the flood; for it we allow ⅜ of a point, making the course N W x N, as it will be flood tide all the way across the bay. Three-eighths of a point is equal to ⅞ of a mile in every five mile run, which equals 3⅜ miles of a drift allowed for in the five hours approximately, that it will take us to make the run. As the bay is being crossed the light on Race Point is slowly dropped, then its 90 second flash disappears. Hardly have we lost the Cape Cod light when the welcome 1-4-3 of Minots Ledge light is raised and soon the six second double flash of the Graves, quickly followed by the 30 second white flash of Boston light and the double red of Boston light vessel.

With all these lights in view and soon to be supplemented by the two white ones on Baker's Island, it is odd how so many of the skippers in the Marbleheaders make such poor landfalls, some of them even having an affinity for Cape Ann. Particularly does the shore to the North attract them. If the angles of the lights from each other are not fixed clearly enough in their minds it is no trouble to take a two-point bearing from which their positions can be placed with a fair degree of accuracy, certainly within a quarter of a mile.

After the Baker Island lights are raised it is but little trouble when near enough to separate the Marblehead light from the others that are near, it being a different white from the others and its location the most northerly on the Neck. Besides these features there is a something that tells which is the lighthouse light, even though it has never been seen before.

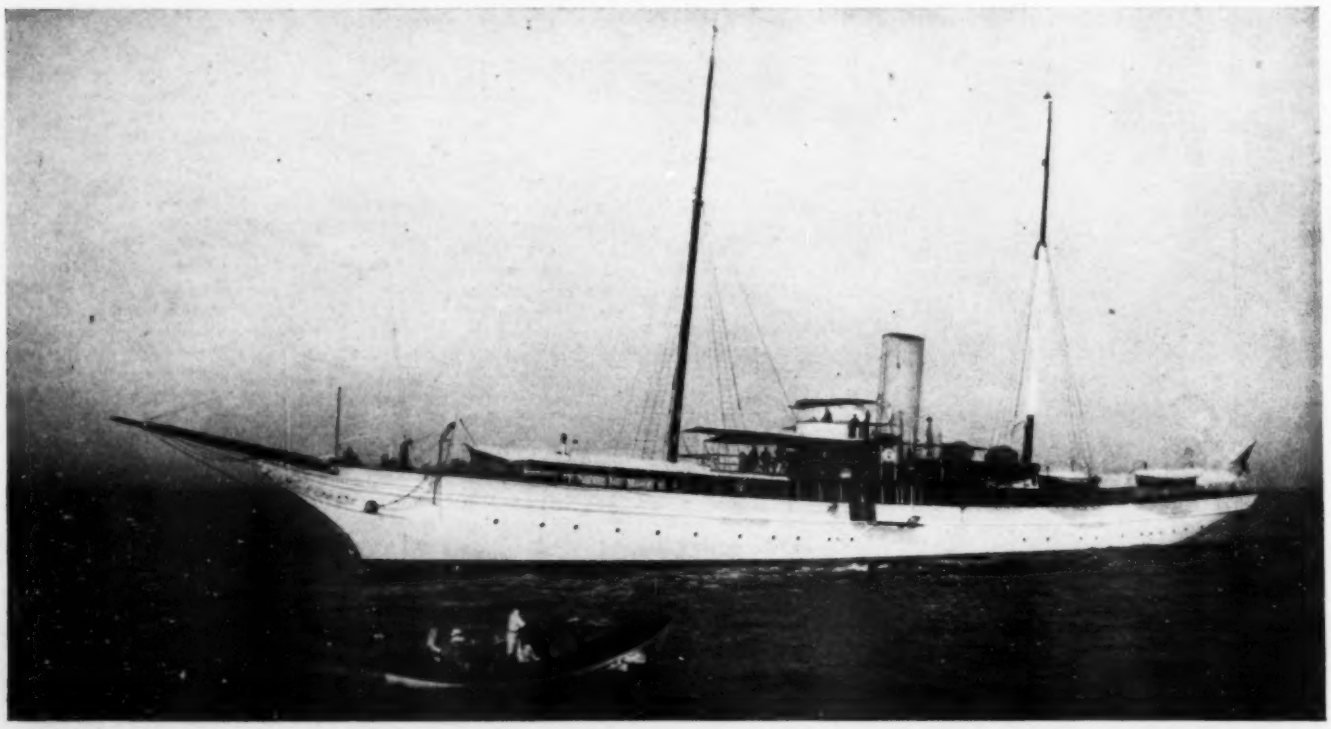
Under such circumstances, spread the chart, and after looking at it look at the lights and imagine the spot you must occupy on the chart to be able to see them from the same angles as your eyes see them. If that does not place you close enough, sight over the compass at, say, Minots light, then at the Graves, and line off the same bearings, from their positions on the chart. Where the two lines cross is your position. Lay a course from there straight for the Marblehead light on the chart and steer the course thus obtained. Then you will find the real Marblehead light dead ahead.

This system of locating one's position holds good for any coast or section. When approaching a coast at night it looks like a continuous dark line without breaks or entrances; the hardest time to approach it being just before the lights are lighted. At that time I prefer to hold off until they are lighted.

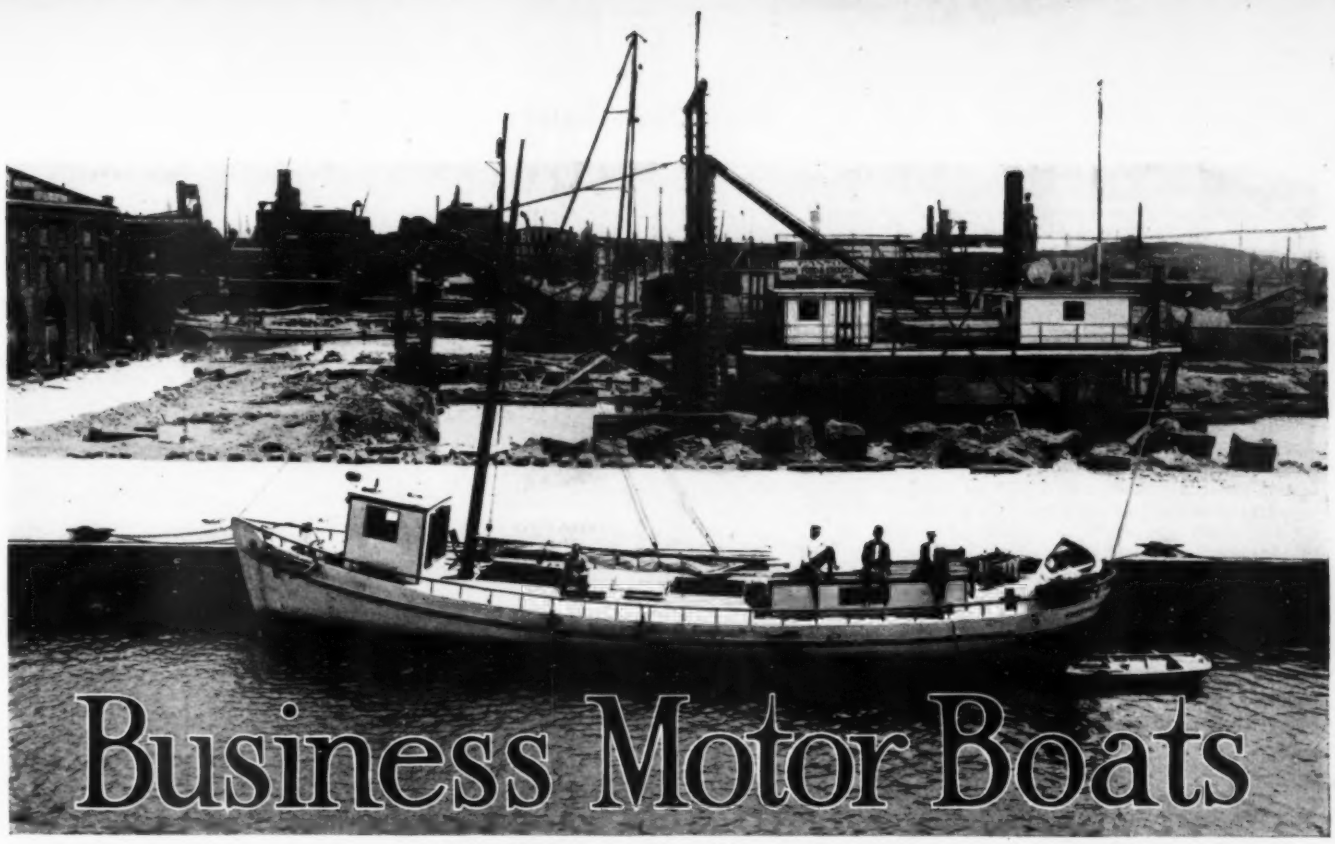
If you have located your position by bearings you may proceed with confidence, always steering a course that you have previously laid out. As you near the shore the density of the shadow begins to vary and you will be able to make out the irregular water line. If, on nearing Marblehead, one finds that his course will place Marblehead Rock between the boat and the light, it is better to swing to the South far enough to pass between the light and the rock. The passage is not wide, but the shorter the distance one has to judge, the easier it is to do so. Now, as you are fairly in with the shore, if the night is dark, you should steer a course previously laid out, and supplement your precaution when necessary by looking low along the water.

For rivers and inland waters that are not well supplied with lights pilots will fix the sky line of the hills or any irregularities in their minds and by day will see whether their courses or ranges will direct them toward the crests or one side or the other of the hills; or to any special tree or groups of trees, or the ridge of a house or other structure, or any object which shows its outline against the sky, and by this means will direct their vessels with very nearly the same certainty that is attained in daylight.

In night running it is important to know the speed of the boat and to measure on the chart the distance to be run. If you have arrived at the end of a "blind run," that is, a run with no definite bearing by which to locate it, or only a buoy, perhaps, which cannot be seen, though it may be near, verify the position by soundings.



When extremes meet.—A motor dory passing Cornelius Vanderbilt's North Star as she started on her recent record trip across the ocean.



Business Motor Boats

Nettie A. Ruark, a type of "down the bay" barge.

The Working Motor Boats of Chesapeake Bay. What They Are Like and What They Are Used For. A Large Variety of Boats in Varied Services.

By Stuart Stevens Scott.

IN a section of the country so interspersed by waterways that it is as necessary for a man to own a boat as it is to have a horse and carriage, it is logical to conclude that the greatest boon to the people would be a quick and cheap means of marine transportation. Such is the case in Maryland, where the Chesapeake Bay and its many tributaries penetrate the state in every direction, affording thousands of miles of navigable water for shallow draft boats.

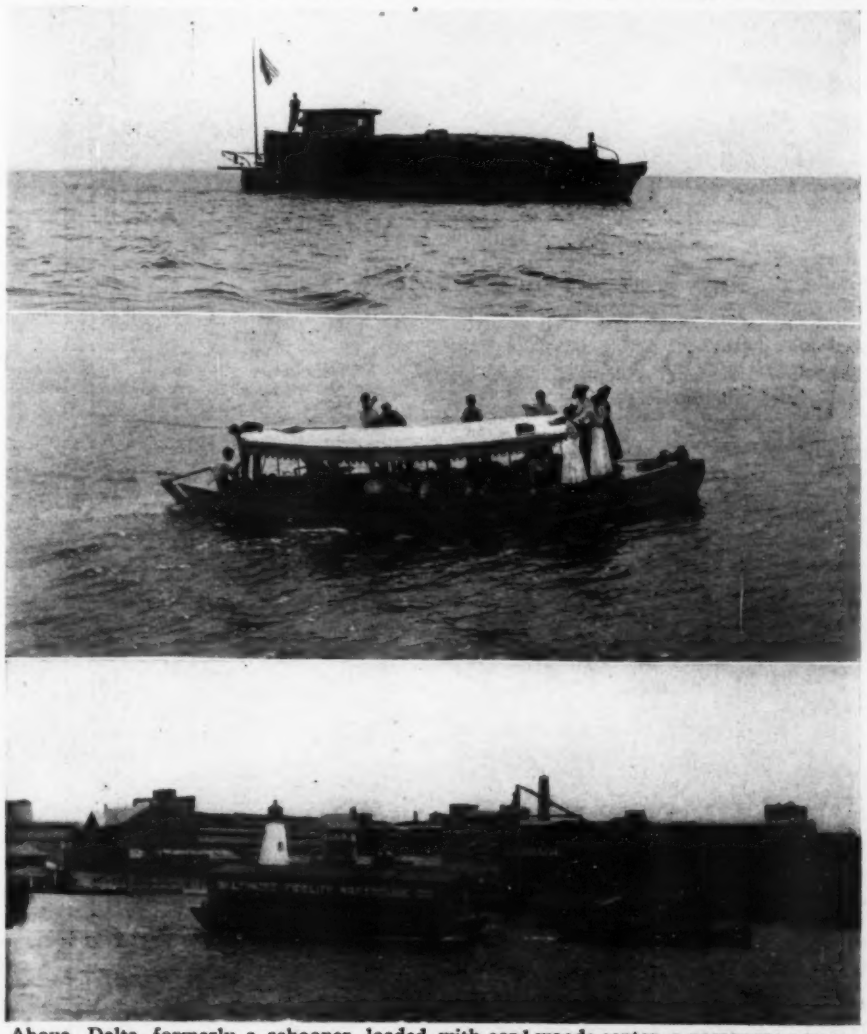
There are few states in which so many people make their livelihood from the water as in Maryland. There may be some states that can boast of having more seafaring men who gain their wage on deep water, but in the Terrapin state, with the waters abounding in oysters, fish and crabs, to say nothing of terrapin and duck and with thousands of farms along the shores where countless tons of vegetables and fruits are raised annually to be shipped, the waters are looked upon as the highways and are much used.

Baltimore, the largest city in the state, situated at the head of the Patapsco river, and thus within water communication with every one of the tidewater counties, is naturally the mecca for all craft enroute to market. It is there that craft of every description, oar-propelled fishing skiffs, canoes, bugeyes, schooners, square-riggers, and river, bay and ocean steamers, make harbor and discharge their cargoes from not only tidewater sections of the state but from ports all over the globe.

It was in Baltimore that the fastest of the old clipper ships that carried the American flag to every part of the seven seas were built. It was there that Rumsey experimented with his steam craft before Fulton built his Clermont. It was there that Thomas Winans carried on his experiments with a submarine and it was there that Simon Lake built the first submarine boat that proved to be really practicable.

With sail, steam and under water craft Baltimore stands as the pioneer, and she yet claims another distinction, that of having the first craft that was ever propelled by gasoline, a little 30-foot boat that was driven by a 4-horsepower vertical cylinder engine. This boat, Water Witch, was equipped by Messrs. White & Middleton, and to them goes the credit of being the pioneers in the construction of marine gasoline engines.

That was in 1887, although about the same time Capt. C. C. Roe carried on experiments with a stationary gasoline engine on a vessel of his own and found the engine, despite the amount of gearing necessary, to be so suc-



Above, Delta, formerly a schooner, loaded with cord wood; center, a passenger power canoe; below, gasoline launch which tows lighters at Baltimore.

cessful that he has it to this day.

Water Witch and Capt. Roe's craft were used for pleasure only and although yachtsmen of Baltimore, as well as of other cities, had invested in the new motive power and were finding it convenient despite its being more or les unreliable, it was not until 1894 that Mr. Henry Wickert, of Bodkin Creek, Md., brought his little bugeye, No Name, to Baltimore and had installed in her a 4-horsepower White & Middleton gasoline engine.

Mr. Wickert is a truck farmer. On his broad acres he raises great quantities of garden truck, and for years he has been operating a fleet of sailing craft. The necessity for getting perishable produce to market promptly was great and he turned to the gasoline motor for purely business reasons. Thus he became the first man to employ the power in commerce.

On the Patapsco, where steam or sail were the only means of propulsion, great interest was immediately aroused among all the skippers of craft that plied on the bay and estuaries. Day in and day out, paying no attention to either the yachtsmen or the bay boatmen, Mr. Wickert's little boat, for she was only 35 feet long, plied her way, not infrequently towing behind her one or two small schooners or sloops at a fair speed when the river was dotted with becalmed sailing craft.

Used by the shipping reporters of Baltimore papers.

Florence, used in Hampton Roads for soliciting orders.

After No Name had been running on the river nearly three years and had demonstrated that she was a paying proposition Mr. Robert Turner, of Betterton, gave C. Durm & Son, of Baltimore, an order for what was then the largest power barge that had then been built. She was Elizabeth, 91.6 feet over all, 21.6 feet beam and 5.6 feet depth, and was equipped with a 60 horsepower White & Middleton engine, which was also the largest engine of its type that had been built.

It was not long after that there was a general rush to get engines, and White & Middleton, who enjoyed practically the entire field, reaped a golden harvest. Capt. Jack Lewis put a 30-horsepower engine in his big sloop, Charles M. Kelly, the largest craft of her type on the bay. Tilyard & Watkins were the first to install a motor in a schooner, putting a 30-horsepower Monarch in Lavinia. Capt. Thomas Lambert put a 60-horsepower White & Middleton in his big bugeye Gladdess. Capt. John Reed put a 30-horsepower White & Middleton in his large coasting schooner George S. Cripps. About the same time the owners of the small sidewheel steamer, Bertie E. Tull, took out the steam plant and put in two 50-horsepower motors, which they geared to the sidewheels.

Those mentioned were the forerunners, and it would be difficult to follow further in succession those who went in for the then new power. Following in the wake of White & Middleton were many others who took up the building of engines, and during the past few years fully a score of different makes of engines have found their way to the shores of the Chesapeake bay, and, be it said to their credit, they have found a good market.

According to the records at the Baltimore Custom House there are 84 documented gasoline vessels, their combined tonnage being 2,035 gross tons, some of which are yachts and some are working craft. The records of the United States Steamboat Inspectors at the port show that there are 18 vessels of over 15 tons propelled by gasoline that are engaged exclusively in carrying freight and passengers, while three of that number carry passengers only. The tonnage of the 18 vessels totals 1,079 gross tons. Of these craft, Bertie E. Tull, 163 tons, is the largest.

These records give but a faint idea of the real number of boats, for the majority of the freight carrying craft now in service have been built at shipyards at Annapolis, Cambridge, Solomon's Island, Oxford, Salisbury, Madison, Elkton, Havre de Grace and other small cities from which they obtain their papers. Then, too, there is a large number of craft built in Virginia, many of which, from time to time, go into Maryland waters to run on time charters in the fishing, trucking and grain seasons.

Of harbor craft propelled by gasoline Baltimore has about as complete a collection of styles following as many kinds of business as can be found in any city in the world. To begin with, there are American Reporter and Sunbeam, used by the shipping reporters of the American and The Sun, respectively. The former was the first gasoline tug to be built and was built in 1904 by Tilyard & Watkins, to tow their fleet of sail boats. Later, when not used in hunting for news she was used by the firm in handling their fleet of harbor lighters and she proved to be all that could be wanted. She is of 7 tons, 45 feet long, 8.2 feet beam and 4.1 feet depth, equipped with a 30-horsepower White & Middleton engine.

A type of boat that has proven popular, and which has been copied in general design on a smaller scale, is Petrolia No. 2, used by the Standard Oil Company for delivering oils to the shipping. This boat was built at Baltimore in 1902 and is 60 feet long, 11.2 feet beam and 4.7 feet depth, registering 14 tons. Her

Auxiliary bugeye Emma. She represents a type.

Petrolia No. 2—in the oil business.

engine is a 30-horsepower White & Middleton, and she is regarded as one of the speediest of the harbor work boats.

Of other gasoline craft they are legion in number. There are gasoline ferries, boarding house runners, water boats, boats for solicitors for ship chandlers, sail makers, ship brokers and others, while even a wash woman who formerly rowed around the harbor now has a launch. The Anchorage and the Sailor's Mission also have launches. Indeed there are few individuals or firms doing marine business who either do not own or charter gasoline boats.

The handling of cargo by means of lighters is an important phase of the marine business of Baltimore and a dozen or more of gasoline-propelled craft of all sizes have, to a considerable extent, replaced the many small steam tugs that formerly plied in the harbor.

Of the larger craft that ply on the bay there are a number of fine, large and modern gasoline craft that will rank with any of their type. Perhaps the best type of general passenger and freight craft is Princess. She is of 113 tons, 110 feet over all, 23.3 feet beam, and 6.7 feet depth. She is propelled by a 125-horsepower Harris engine and was built at Cambridge, Md., in 1907. This boat is owned by the Independent Transportation Company and runs on a regular route between points on the Miles river, on the Eastern Shore, and Baltimore. She makes 11 miles an hour loaded and has, during the past two years, made her runs with the regularity of a steamer.

Another good barge that is representative of a popular type is Leader. She is of 39 tons, 70 feet long, 18.6 feet beam and 5.4 feet depth. She has a 35-horsepower Globe engine and though of moderate speed she does well in the general freighting business.

Representative of the "down-the-bay" built barge is Nettie A. Ruark, which was built at Fishing Creek, Md., and which is of the dead-rise type. She is of 14 tons, 55 feet long, 15.7 feet beam and 3.8 feet depth, equipped with a 30-horsepower Regal engine.

There are dozens of these barges, ranging from 10 to 75 tons, but they are all pretty much alike in general appearance. Now and then, however, one sees a barge that is unmistakably the hull of what was once a sailing vessel. Of such a type is Delta, which was formerly a schooner. She is now engaged in carrying cordwood and, under power, she can carry more than when she was a sailing craft.

Of auxiliary craft there are a large number. Just how many there are is difficult to ascertain, as they are registed only as steam vessels. One of the most consistent of the auxiliaries is the bugeye Emma, equipped with a 10-horsepower White & Middleton engine. She is owned by Tilyard & Watkins and was made an auxiliary a few months after the firm installed an engine in their schooner Lavinia. The Emma is of 9 tons, 65 feet over all, 15.3 feet beam and 3.5 feet depth. In winter she is used in the oyster industry as a buy boat, in the spring she runs fish scrap, in the summer she runs produce and in the fall she runs grain. Such, however, is the experience of most craft of her type and most of the barges, so that there is no season of the year when a boat cannot work on the Chesapeake.

In the oyster industry the gasoline engine plays but a comparatively small part, for the Maryland law prohibits dredging craft using anything but sails for moving over the oyster rocks. Two years ago, however, following the investigation into the shanghaing conditions on the bay by the Federal authorities, it was almost impossible for the dredgeboats to get crews to work the windlasses.

Water boat, with gasoline motor, in Baltimore harbor.

Leader, 70 feet long, 39 tons with 35 h. p., Globe engine.

Webster, Ford & Company, of Baltimore, oyster commission merchants and owners of a number of dredgeboats, went to the Fairbanks Company and interested them in the construction of a gasoline hoisting engine with suitable gearing to work the windlasses. The firm responded, and today there are between 50 and 75 of these little engines on the decks of the oyster craft, each one doing uncomplainingly and economically the work of eight men.

Just across the middle of the Potomac river, in Virginia waters, the gasoline oyster boat is in full bloom and there are a score of them having not only engines for propulsion but engines for working the dredges.

While the gasoline engine has proven a boon to general commerce on the bay, by far the greater number of engines are used on the Eastern Shore of Maryland where there are hundreds of creeks and where boats are absolutely necessary. The Eastern Shoreman learns to handle a boat just as soon as he gets out of dresses, and the boy who owns a boat is in about the same relative position as the inland boy who owns a pony.

Dozens of the little creeks making off from the ship channels in the Elk, Sassafras, Chester, Choptank, Miles and other rivers

are but a few feet in depth and yet they penetrate the country for miles and miles. Many of them are too wide to be bridged and, in many instances, to go by land from town to town would involve long journeys whereas by water it would take but a short time.

In such a section the cheap, effective gasoline motor has found a ready sale, and motors have been installed in craft of every size and even the steam and oared ferries have been replaced by the liquid fuel power. The steamer Vivian, that for years ran as a ferry between Bellvue and Oxford, across the Tred Avon, is now a power boat, having replaced the steam plant with a 50-horsepower Fairbanks engine that has given excellent service.

Dotted with farms, the Eastern Shore is also dotted with summer boarding houses, nearly every farmer opening his home in the warm weather for the accommodation of city folk from Baltimore, Washington, Philadelphia and nearby cities. In bygone days the advertisements in the railroad company's summer book and in the papers mentioned sailboats. Now the advertisements tell of launches.

Some of these farmers are far sighted and keen to take advantage of the flexibility of the gasoline engine. For instance, there is George N. Brinsfield, of Royal Oak. He has a two-horsepower engine that he uses in general farm work in the winter but in the summer he places the engine in his canoe to take out his guests for a spin on Broad Creek or the Choptank.

And the pleasure to be derived from these launches! At every town and at every landing on either side of the bay these little craft are to be seen either at anchor or else flitting about crowded with gay summer boys and girls, laughing and singing, but little realizing the vast amount of money and brains that has been called into play to perfect the little engines that push them so swiftly along.

As a business proposition the Chesapeake Bay offers a wide range to the manufacturers of liquid fuel engines. True there are scores of different makes in use, but there is room for other scores, for I do not think that the surface has been more than scratched. No matter what part of the bay one may go, and I have been pretty much all over it during the past three years, there are gasoline boats being built, while on every side canoes, bugeyes and schooners are being converted into power boats, engines of from 5 to 30 horsepower being installed.

The "down-the-bay" trade is ready for the engines and it is now only a question of the engine manufacturers putting their motors before the men, to demonstrate that their product is strong, reliable and worth the money asked and the deals will be quickly consummated.

Not only is there room for business among the men who would use the gasoline engine for making a livelihood but also among the men who follow the water for the love of it. Although reluctant to say it, the day has come when power under the cockpit floor of a sailing yacht is no longer a luxury. It is a necessity. Hours of light winds or no wind at all and imperative demands of business makes a combination that a man, be he merely a clerk or the head of an establishment, cannot beat unless he has a "kicker."

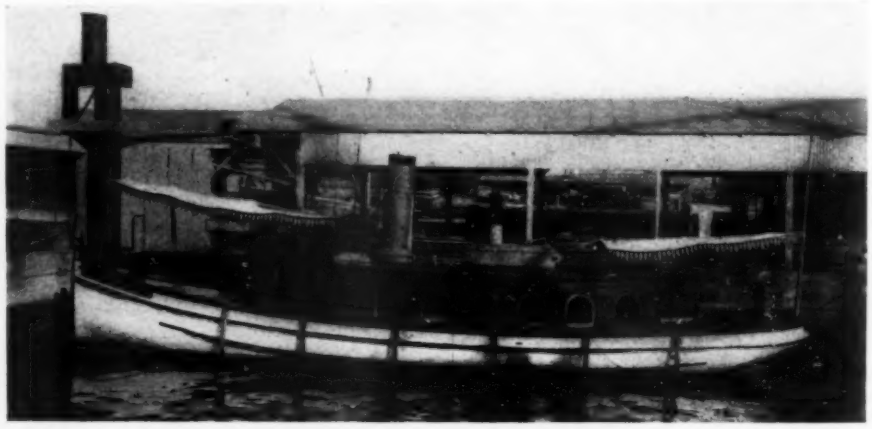
A phase of the gasoline engine that has attracted much attention and which has met with favor not only among yachtsmen but among skippers of bay sailing craft is the power yawl. A yawl equipped with a 3 or 4-horsepower engine often proves of great value not only as a tender but for pulling or pushing the larger craft. It is not uncommon to see these little craft tucked up under the stern of sailing craft of from 35 to 50 tons chugging away and pushing them two to three miles an hour in a flat calm. When there is plenty of wind the power yawl is hoisted on board out of the way, taking up no more space than though it were a yawl of the ordinary kind with no power in it. In harbors the yawl is especially useful in shifting the larger craft from berth to berth, saving many a dollar that would otherwise go to some tugboat man, while when at anchor in the rivers the little engine saves many a mile of rowing.

Another fine boat added to the fleet of gasoline-propelled craft intended strictly for business is "Nellie L. Grebb," which has just been built at Baltimore and which will rank among the largest and most powerful of her type. She was built by her owner, Mr. Louis Grebb, an oyster packer, and she is intended to do the work that was formerly done by a steam tug, viz: towing and docking oyster boats, scows, etc.

She is 50 feet long, 10½ feet beam and five feet depth of hull. Her motive power is a 60-horsepower, six-cylinder, heavy duty Buffalo engine, besides which she has a dynamo with which to supply a complete electrical outfit of inside illumination, running lights and searchlights. Not intended for anything but a workboat, she has but two compartments, a pilot house, six feet square, and a main cabin. In her bow is a copper tank with a capacity of 500 gallons of gasoline, while aft, are two 100-gallon fresh water tanks.

Built to withstand rough usage and to fight ice, she is exceptionally heavily constructed. Her frames are each four by four inches, spaced 10 inches, center to center. Each frame is of selected oak and she is planked with the best of Georgia pine, fastened below the water with copper. A feature of the "Grebb" is the fake stack. In most craft these stacks are used for vents for the engine room but in this case the stack is an air tank, the air being used for the whistle.

Unlike most boats this one was not built on shore but on a scow at Mr. Grebb's wharf on Boston Street. When the hull was completed it became a question how she was going to be put overboard. Some suggested sinking one end of the scow. Another recommended sinking the whole scow, and for two weeks or more the boat was the one topic in that portion of Canton Hollow and everyone was wondering how "Louie" Grebb was going to get his tug overboard. Mr. Grebb also pondered but, finally, he sent for a wrecking machine and when the "Grebb" was ready she was placed in a sling, raised from her birthplace and gently lowered into her element.



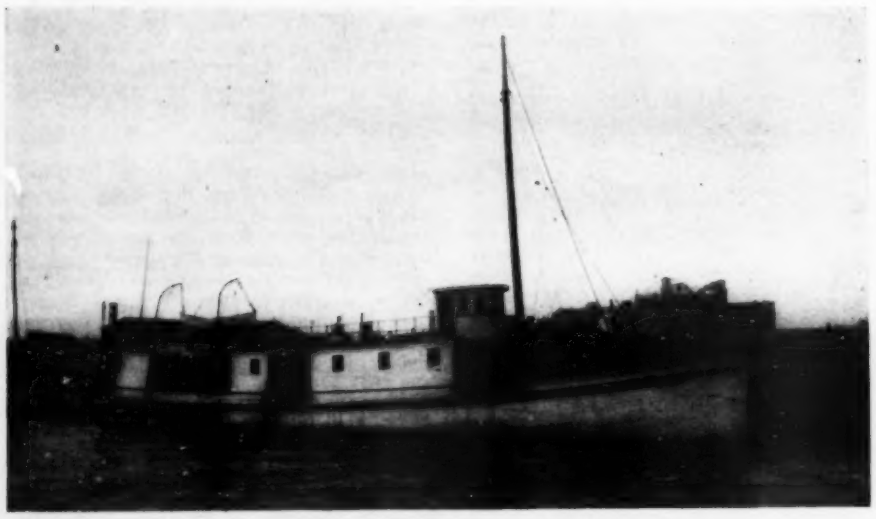
Nellie L. Grebb. Her business is towing and docking oyster boats and scows.

In general appearance, in model and in her finish of natural ash, the "Grebb" is a reduced copy of the Baltimore police steamer "Lanan" and at a distance it is difficult for some persons to tell them apart.

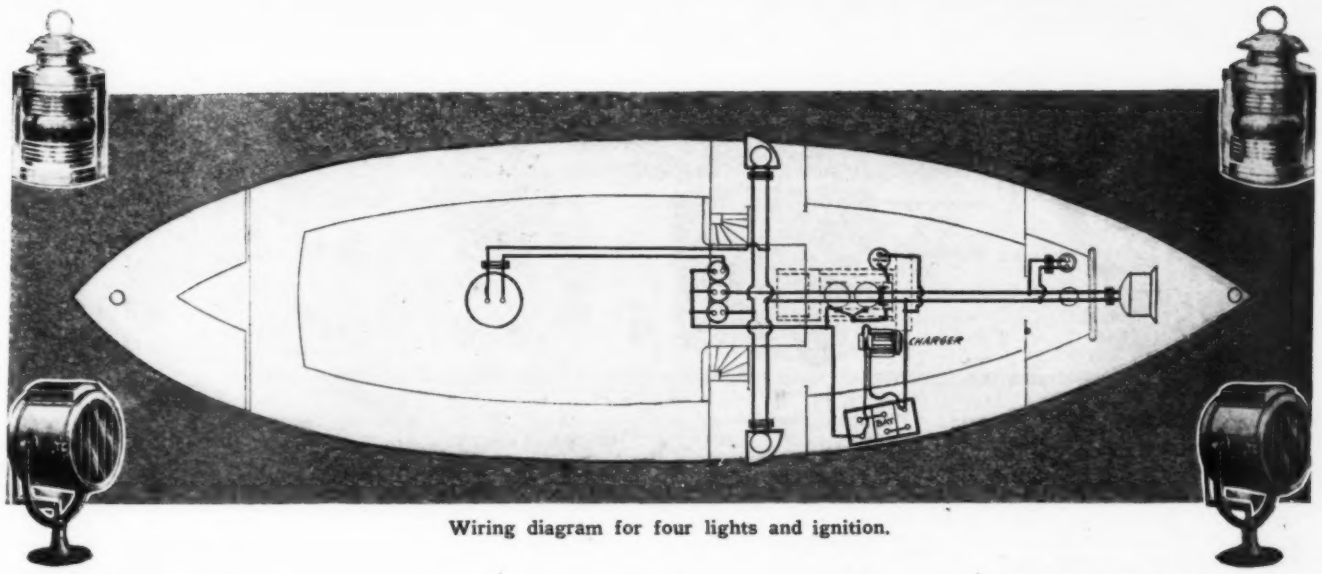
As showing the great general interest in the substitution of the business motor boat for the sailing craft, an editorial from the Baltimore *Sun* bearing on what has already been done is noteworthy.

"The power boats are growing in numbers and efficiency, and already are bringing a large amount of freight to Baltimore. Regular lines have been established from this city recently to various points along the Chesapeake, and they bid fair to develop trade up the many rivers of Maryland where large steamboats cannot penetrate. There are regular boats to St. Michaels and points on the Miles and Wye rivers, to Rock Hall and the Chester river, to the Sassafras and to many of the towns and villages on both the Eastern and Western shores.

"Their efficiency and economy of operation promise to develop rapidly the use of such craft. Where regular lines are established new landings and piers will be built, new communities will spring up at these shipping points and a number of small but active trade centers will be created.



Princess—a fine type of general freighter motor boat.



Wiring diagram for four lights and ignition.

Electricity for Motor Boat Lighting.

The Principles of the Dynamo-Storage Battery Lighting and Ignition Outfit. How to Select and Install the System in a Boat.

By R. V. Sutliffe.

THE desirability of electricity as a general illuminating medium especially for motor boat work is almost universally acknowledged. It would seem, therefore, that by this time every motor boat of reasonable size would so be equipped. That such is not the case is due, for the most part, I believe, to the following reasons: high price of the equipment as compared with the total cost of the boat and with the cost of acetylene or oil; the difficulty of maintaining a source of current supply, and hence doubt as to the reliability of such a system; and lack of sufficient knowledge by the manufacturers of these outfits and by the users of the same of a number of factors which must be complied with, if successful and satisfactory operation is to be permanently assured.

These outfits are composed of the following elements: A dynamo, for the source of current, a switchboard or a current distributing and indicating device, a battery or reservoir of current to maintain as nearly as possible a constant pressure, and to provide a source of reserve energy in case of emergency, and, lastly, wires, lights, switches and other features, which may properly be termed the distributing and utilization members of the system. It is the purpose of this article to inform the reader of the points to be observed in purchasing equipment of this kind and to point out the extent of the knowledge necessary to insure satisfactory service after the outfit is in commission.

First and foremost, do not make the mistake of expecting more from the outfit than it is designed to give. We will assume, as an example, that the dynamo has an output of six amperes, and that it will be in operation on an average of twice as long as the electric lights. It will be seen that, proyiding the battery has a large enough capacity, the number of lights which may safely be used, providing each lamp consumes one ampere, will be twelve. It makes no difference of course how many lamps are in the system, providing no more than this number are lighted at the same time. In brief, it is a case of simple addition and subtraction. It will be impossible to use more current than the dynamo is capable of producing, but it should be remembered that the time element is a very important factor. The length of time the lights are in service and the average length of time that the dynamo will be in commission should be approximated as closely as possible. Before consulting the manufacturer or dealer who supplies this outfit, make up your mind as to the candle power of the lights desired and the number which will be burning at the same time, and, if the dynamo is to be driven from the engine which runs the boat, the ratio of the time the engine will be running to the time the lights will be burning should also be supplied for the information of the salesman with whom you deal.

When these outfits first came on the market, and before the magneto was much used for ignition purposes, it was the practice to use six volts electrical pressure throughout and thus the same battery which supplied the current for the lights was utilized to furnish the energy for the spark coil, a six volt pressure being ample for the latter. While this pressure is correct for a spark coil, it is too low for economical results in an electric lighting system. An increase of voltage, however, necessarily increases the size and weight of the storage battery, the question at once arises as to what is the best voltage for a battery of normal weight and ample capacity. For outfits which do not include more than 12 lights, I should say that a 12 volt pressure would give very satisfactory results, with the additional advantage that, if the battery is tapped in the middle, six volts may be drawn from it for ignition purposes.

A summary of the points to be observed when investigating this method of illumination would incude the following: Is the dynamo of ample capacity for the work, and will it stand a 40% overload without undue heating? Is it designed for the special mechanical and electrical conditions with which it will have to deal? How is it driven? If by belt, has provision been made for maintaining a constant speed and if the dynamo speed varies with that of the engine which is driving it, is provision made on the switchboard for maintaining a constant voltage by means of a rheostat? For example, if the dynamo is driven by a friction governor, is the frictional surface large enough to pull the load and is the governor itself sensitive and durable? A dynamo for this work should be especially well insulated and if it is not completely enclosed all windings should be impregnated before they are assembled and all metal parts should be of brass or of iron, well coated with paint to protect them from rust.

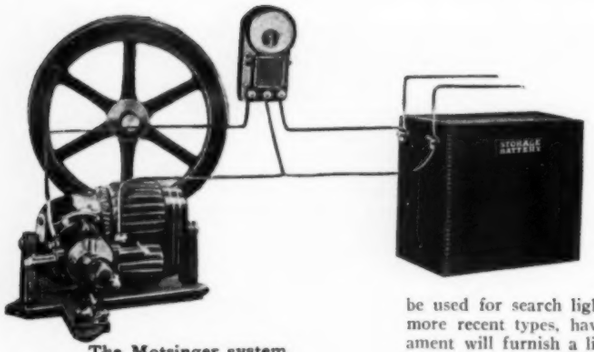
The switchboard also should be especially protected against moisture and should be equipped with indicating meters of the closed circuit type of ample capacity and accuracy. Be sure that these meters are so connected that they will indicate the true condition of the battery, and that means are also provided for ascertaining whether the dynamo is properly generating or not. On most switchboards of this type, there is an apparatus commonly called the automatic cutout or under load circuit breaker. The object of this mechanism is to protect the battery from a short circuit or an excessive load, as for example, if the battery were to discharge itself through the dynamo when the dynamo was generating. Be particularly careful to ascertain that the contacts of this circuit breaker are large enough to carry the current and that it is very positive in its action.

There is one other important feature which should not be overlooked. The outfit should be provided, either on the switchboard or as a part of the dynamo, with some means for insuring a constant voltage to the lamps. Right here let me explain. Another disadvantage of a low voltage system is that any slight variation in the voltage is readily noticeable, not only in the intensity of the lights, but also in the lives of the filaments. Should the voltage drop, say to 11 with 12 volt lights on the circuit, the lights will burn a dull red. Should the voltage ascend to 13, due to high speed of the engine or for some other reason, the lights will burn very white and brilliant, but their lives will be short. It is possible, by means of a governor on the dynamo or a rheostat in the switchboard, to maintain a battery voltage which will give uniform results, and the prospective purchaser should make certain that his outfit is so provided.

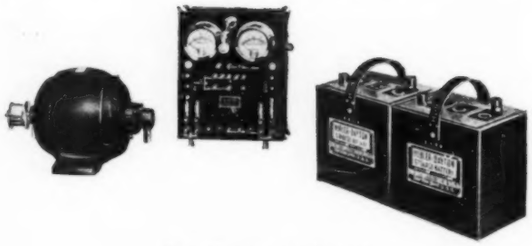
In the selection of a battery but little is to be said. It should be of the voltage of course that the system is designed for. Regarding its capacity, this rule may be safely followed: multiply the average amount of current which you expect to use from the battery by 10 and see that the rating of your battery is equal to this product.

Too little attention is paid to the wiring and the fixtures. As a matter of fact there is no electric light installation in any class of service which should be as carefully protected and installed as the wiring of a motor boat. Even the conditions surrounding the electrical equipment of a battleship are no more severe than those to which the wiring, fixtures and lights of this service will be subjected.

A few rules will outline the main features of a good installation, and are as follows: The wire should be of ample size to carry the current. This is important because of the low voltage and liability of leakage with which we have to deal. Do not use less

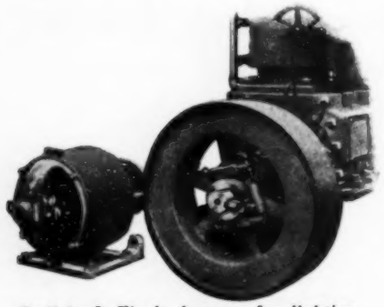


The Motsinger system.



The Dayton equipment.

than No. 16 wire. All the wiring should be very securely fastened and should be run as far as possible from those places in which oil and moistures are apt to collect. The wire should not only be well insulated, but



Carlisle & Finch dynamo for lighting.

should be absolutely waterproof, and where run through metal frame work, etc., it should be further protected by a conduit or bushing of some nature. All joints should be soldered. The lamps should all be provided with plugs so that they may be removed for cleaning or for other purposes without cutting the wires, and the sockets should be firmly secured in the lamps. Some of the attachments now on the market are very good but others are entirely too shaky for this work. I would recommend Edison sockets, where there is room. It is easier to obtain Edison base lamps and these lights are bound to have a better vacuum, longer life and to give better all around service in every respect.

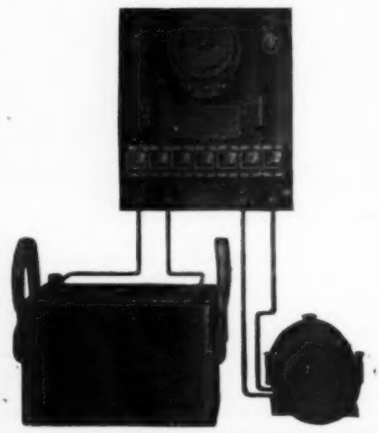
The new metallic filaments of high incandescence use far less current per candle power than do the older carbon filament lights and where their filaments are well supported and the vibration not excessive they may safely be used for search light work. Some of the more recent types, having a concentrated filament will furnish a light which may be projected for several hundreds of feet, which is ample for ordinary use on small boats. If the most powerful light possible is desired, the search light should be of the arc light type, the dynamo not charging the battery, but running at higher voltage necessary to maintain this arc. For search light work the dynamo should have a pressure of at least 35 volts. There are a number of this type which will charge a low voltage battery, and which may also be connected direct to a high voltage search light.

The knowledge required to properly run an outfit after it is installed it but slight and the instruction books furnished cover the matter very thoroughly. In brief this knowledge may be summed up as follows: Be sure that when the dynamo is connected to the storage battery it is generating sufficient current to properly charge the latter. Make certain that when the dynamo is not generating or not generating properly, it is not connected to the battery. Do not overload your battery. If you see that your outfit is not large enough for as many lights as you wish, cut down the number of lights or purchase larger apparatus, as it will not be possible to satisfactorily maintain an overloaded system for any length

Gilmore searchlight set.

of time. The battery should be kept filled with pure electrolyte. Do not let its voltage drop below 1.8 volts per cell. Multiply the number of cells which are connected in series by 1.8. This product will be the meter reading below which it is not wise to let the batteries fall. Watch your wiring closely so that no short circuits can occur, since a short circuit is not only very injurious to the battery, but is liable to burn out parts of the apparatus as well.

In conclusion, electric lights are very desirable. They are safe, clean and convenient. Their first cost is more than that of other methods of illumination; but if a desirable outfit is purchased and is given a fair amount of proper attention, and is not overloaded, it will be found a source of gratification, and there is no reason why it should not remain satisfactory at a far lower up-keep cost than either oil or acetylene.



The "Aplco" lighting and ignition outfit.

Points and Opinions on Exhaust Outlets.

By D. Reid.

UNTIL recent years, little or no attention has been paid to the silencing of the exhaust from the gasoline engine. The matter was first taken up by the automobile builder, and the designs now in use show a marked improvement over those of a few years ago.

In the automobile industry, a muffler was required that would exhaust silently into the atmosphere, and this type has been adopted to an extent for the motor boat, with changes to meet the changed conditions. Recently an endeavor has been made to produce a device for motor boats which would permit the engine to exhaust under water, and like the beginning of the muffler, a large number of designs have been produced and placed on the market.

A type which was among the first to demand the attention of motor boat designers and users is one that is so made and placed that when the boat is in motion, a jet of water will pass into the exhaust passage. The designer's idea is that the jet of water will create a suction in the exhaust pipe, drawing out the exhaust gases, which under ordinary boat speed would seem to be an impossible condition. The ordinary velocity of exhaust gases issuing from a gasoline engine cylinder is about 6,000 feet per minute, or over 1⅛ miles per minute. If the boat is traveling at less speed than the velocity of the gas, the gas will be drawing the water through the nozzle instead of the water drawing the gas. If sufficient time was allowed between exhausts or if the nozzle was sufficiently large, there is no doubt but that a partial vacuum would be found in the exhaust pipe, but with the small nozzle used and the short space of time between exhausts, there is nothing measurable.

In another design which has approximately the same features, instead of the nozzle a slot is used, the claim made for the use of the slot being its condensing effect on the gas, which, in the writer's opinion, is nil. The products of combustion are carbon dioxide (CO_2) and hydrogen in the form of water (H_2O) or superheated steam; and as water in sufficient quantities to condense the steam into water, is usually run into the exhaust pipe to keep it cool, all the condensation possible will have taken place before the gas reaches the exhaust head. Under these conditions the slot or nozzle is a detriment, as it partially fills the cavity formed in the water by the exhaust head.

Still another form bases its claim on obtaining a cavity. In moving through the water, a considerable cavity is formed, behind a shield, and into it the exhaust escapes. In backing up, the shield will fill with water and there will be a greater resistance to the escape of the exhaust than in the other forms mentioned.

A fourth form is provided with three openings in place of the one. The direction of the gas escaping from the two smaller outlets is

(*Continued on page 50*).

The Prize Contest in Questions and Answers.

Some More Questions—And More Prizes

WE want to say just a word. It's getting mighty close to laying-up time. We think it would be a good idea to select questions for the November contest which will bring out answers bearing on the various problems which are being worked out during this part of the season. Keep this in mind.

And just another word to the certain Mr. Reader who hasn't yet come into this contest. It's everybody's contest. You cannot but profit by the efforts of others. Let them profit by yours. Be altruistic!

READ the general conditions again:—We will give prizes each month to those who send in the best answers to the questions printed in the issue of the month before, and in order that the department may be helpful to the greatest possible extent, we will give prizes for the best and most practical questions submitted in the next following competition. There will be two questions in the contest this month, and therefore two prizes for the answers.

For the November contest we offer $10 in cash for each of the best answers to the questions given below, and $2.00 in cash for each of the best and most practical questions submitted for the next contest. Answers should not be more than 500 words long, although we do not insist on this limit if the quality of the answer merits greater length.

THE QUESTIONS FOR THE NEXT ISSUE ARE THESE:

1. **What is the most practical and inexpensive way of laying up an unsheltered boat for the winter?**

Suggested by R. J. Johncox, Rochester, N. Y.

2. **When the motor stops unexpectedly, what is the best and surest method of locating the cause and applying a remedy?**

Suggested by L. Kromholz, New York.

None of us is too old to learn. Have you not seen those who count themselves experienced, expend energy on the crank in the blind hope that at the next turn she will "cough?" An ounce of intelligent investigating is worth a ton of cranking.—EDITOR.

Answers addressed to the Editor of MOTOR BOATING, 2 Duane Street, New York, must be (*a*) in our hands on or before October 15th, (*b*) not over 500 words long, (*c*) written on one side of paper only, (*d*) accompanied by the senders' names and addresses. (Names will be withheld and initials or pseudonyms used if this is desired.)

Questions for the contest should reach us on or before the 15th of October.

THE PRIZES ARE:

For the best answer to each of the two questions given above, $10 in cash. (There are two prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.)

For each of the suggested questions selected for use in the next contest, $2 in cash.

For all non-prize-winning answers published we will pay space rates.

To all who send in answers, prize winners excepted, we will give a reproduction (21 x 14¼ inches) in colors of Professor Schnars-Alquist's wonderful painting "Windstarke 10-11" on heavy paper, uncreased. It is a very desirable picture to have framed for the den or club room.

Answers to Questions in September Issue

What Tool and Spare Parts Equipment Should a Motor Boat Carry, and How Should It Be Kept So That It May Always Be in the Best Condition?

The Prize Winning Answer.

IN a small open boat the tools should be kept in a compartment under the seats. A separate compartment must be provided for spare parts. It is needless to say that these compartments should be as waterproof as possible. A snug fitting cover with an overlapping, well painted canvas is usually sufficient.

Everything should have its place. The tools should be fastened on the inside of the cover. Partitions fixed in the bottom will keep waste, oil and grease cans, chisels, etc., separate tools fastened to and wrapped in a canvas or leather roll, while handy to stow away, are not convenient for use on a pitching motor craft in a gale.

As for the spare parts, they should be fastened in place very securely to prevent their banging about and becoming seriously injured, and must be well smeared with grease to guard against corrosion.

In larger craft with the engine in a cabin a wall cabinet is preferable to a box or chest. If economy and convenience only are considered the tools most often in use may be attached to some vacant space on the side by means of clips or better by thumb nuts. The spare parts may be stored away in some out-of-the-way place forward

The tool kit in a small boat must of necessity be limited; three or four chisels of assorted sizes, a screw driver, a medium hammer, one 18-inch wrench and a rather small one for carbureter and spark plug adjustments, a monkey wrench and S wrenches to fit the bolts of the castings, are perhaps the most essential. Absolutely necessary spare parts are those of the ignition system, such as spark plugs, cells, etc. Extra valves and springs will often be of use.

In a larger boat a substantial vise should be provided, also a complete set of wrenches, chisels and punches, taps and dies, torch, babbitt and ladle, packing for valves and gaskets. The spare parts supplied by the engine builders with some pipe fittings and bolts and nuts complete the list.

In every case select the outfit from a reputable supply house and avoid the tools "cracked up" as being work shops in themselves.

W. H. DUNN, Pinebur, Mississippi.

An Extensive List.

THERE have been many combinations of tools made up by hardware houses for the motor boat owner, some fine, some cumbersome, others impossible unless you wish to carry only tools. But they all make the mistake of putting them in a canvas roll cover. Drop one of these outfits in your tool locker and in about a week you can tell, from the rust marks on the contents, the number of threads to the square inch of canvas.

To keep a kit of tools in efficient shape and have them convenient, a pressed steel tool box fitted with two lift out trays has the advantage of being watertight as well as neat and compact. If the following selection of tools be kept in their respective places in such a container, the owner may rest assured that he can make any repair to his boat or engine; so far as the tools are concerned.

In the bottom of the box on account of infrequent use:

1 small can "Smooth-on" for cracked waterjackets, castings, etc.
1 small tin shellac, for gas pipe line.
1 can each: Assorted cotter pins, assorted hex. nuts, assorted washers. (These are standard goods and may be had at any supply house.)
1 valve complete (in separate container).
2 spare valve springs.
Emery paste for grinding in valves.
Hack saw and 12 blades.
Solder copper and bundle of flux solder (solder with rosin core).
No. 2 roll friction tape.

In the middle tray:

1 10-inch mill file.
1 8-inch ½ round file.
1 rat tail file.
1 file handle.
1 cotter pin extractor.
1 cold chisel, ¾ inch.
1 cape chisel.
1 round nose chisel.
Small hand vise.
1 pair gas pliers.
½ doz. spark plugs with copper-asbestos gaskets (each in separate container, generally a round, screw top box).
1 vibrator complete for coil in separate container.
Spare union, R. & L., for gas pipe line.

In the top tray:

Large solid metal screw driver.
Small screw driver.
6-inch combination pliers (with cutting edge).
S wrenches ¼ to ¾ opening (three in all).
Small monkey wrench.
Small Stilson wrench.
Socket wrench to fit spark plugs.

On the lid, held by spring clips:

8-oz. machinist's hammer.
8-inch Stilson wrench.
8-inch monkey wrench.

This outfit will weigh rather heavy—between 50 and 60 lbs.—but "it's all there," and with a small coil of annealed copper tubing, primary and secondary wire stowed in a safe locker it is only a question of a little time when you get "way" under your own power and not at the end of a rope. For long distance cruising, no doubt, a spare wheel would be a proper thing to take along.

C. Peterson, Brooklyn, N. Y.

From Five Years' Experience.

IN regard to the tool equipment required upon the ordinary open launch or cruiser under 30 to 40 feet, and less than 25 horsepower, I would submit the following list as the result of five years' experience. During this time I have made a study of the equipment required, and anyone outfitting with this assortment is reasonably safe as far as tools are concerned for a voyage of any length that a boat of the size and power stated would be likely to undertake.

1 6-inch Stilson pipe wrench.
1 14-inch Stilson pipe wrench.
1 pair 10-inch gas pliers.
1-inch patent combination pliers.
1 10-inch flat file.
1 7-inch three-corner file.
2 screw drivers, one 6-inch and one 10-inch or 12-inch.
1 nail hammer, and few assorted nails.
1 6-inch monkey wrench.
1 cold chisel, ½-inch wide and about 6-inch long.
1 12-inch monkey wrench.
1 spool of fine copper wire.
3 to 4 feet of spring brass wire about No. 12 gauge.
1 piece of emery cloth,
1 piece wire inserted packing, big enough for cylinder head.
1 ball candle wicking.

This list sounds rather formidable, but will go in a small box, and every launch of 30 or 40 feet or less should have the whole assortment; larger boats with larger engines take a good deal of special equipment besides the list.

The handiest tool in the whole assortment is the combination plier, it is a plier, screw-driver, monkey wrench, pipe wrench and vise all combined; next in importance is the 6-inch Stilson wrench, and last but not least, the length of spring brass wire, from it you can make springs, rivets and pins, and it comes handy for more things than a five-hundred-word limit will allow one to enumerate. With this assortment any two-cycle engine under twenty or thirty horsepower can be taken down and re-assembled, and as a large majority of the marine motors now running in this country come in this class, I regard it as a standard equipment.

The necessity for a nail hammer may be questioned, but a hammer of some sort is a necessity, and a nail hammer is to be preferred to a machine hammer, as it can be used for all jobs that the machine hammer can, and can also be used for driving and pulling nails and spikes, and one will find that it will be called into use for these purposes oftener than the majority of men owning motor boats would expect.

Porter G. Pierpont, Savannah, Ga.

A Small List.

ON board a cabin cruiser it is far easier to keep a number of tools in good order than it is on an open launch. Nowadays, one sees many small boats of this class chugging valiantly along with tool kits consisting of monkey wrenches and screw-drivers. But there comes a time, as we all know, when their owners will learn a much needed lesson.

A moderate priced tool equipment may be made up as follows: two screw-drivers, one large and one fine; a pair of pliers, a monkey wrench, a small Stilson, several case hardened flat wrenches fitted to nuts on engine, a cold chisel, file, a roll of tape, a few feet of waterproof wire for an emergency, some sandpaper, and last but not least, a good knife. If the engine is equipped with jump spark ignition, an extra spark plug for each cylinder should be carried; if make-and-break, extra ignition eccentric spring.

In the list named above are all the necessary tools for the operating of gasoline engines, repairing of minor breaks, and emergency troubles of two or four cycles, such as are used in open launches. We have known of enthusiastic would-be motor boatmen with supplies of tools more extensive and expensive than a mechanician has in his bag, but who could not find the tools they were looking for at the times they wanted them most. A great deal of valuable time is lost in looking for a screw-driver, under the cushions, in lockers, under the flooring, and in every one of a thousand places where it may be hidden on a motor boat.

One of the best ways to keep your tools together, and protect them from rusting, is to procure a cloth bag, such as is used for automobile kits. This bag has pockets in it which, although it can be rolled up in a very small place, will hold the list of tools mentioned before. If there is a muffler underneath a locker, which keeps the locker dry without excessive heat, if either water cooled or covered with asbestos, one can easily dispose of the tools there. It gives one a great deal of comfort to feel that you know where to put your hand on a screw-driver if it has to be used immediately.

G. H. Hands, N. Cambridge, Mass.

What Precautions Should Be Taken To Prevent Fire On Board, and What Can Be Done In the Way of Fireproofing Around the Engine?

The Prize Winning Answer.

A GOOD able bilge-pump will do much to prevent fire—if it is used. The space beneath the flooring forms a fine big combustion chamber, in which an accumulation of oil floating on bilge-water constantly invites fire and quickly spreads fire if once started. Keep the bilge always pumped dry.

Cabin ventilation is an easy and important precaution against the accumulation of gas, a cause which may not start many fires—it certainly never starts more than one in the same boat! Have plenty of ports and hatches that can be opened—and open them. Never take a cigar or a lantern into the cabin after it has been closed up for any length of time, without first ventilating thoroughly.

A hand incandescent lamp should be used about the engine—never a torch or a lantern. It is the most convenient thing imaginable, may be always ready connected up so that a touch of a button or switch turns it on. It will reach into corners where a lantern won't go, requires only a small battery, and costs a trifle. Get one.

Faulty feed pipes cause lots of fires. Use only copper or brass—not lead. Pick out a pipe that is amply heavy, and then go back and get one twice as heavy and put it in. Use the same generosity with unions and couplings. At the engine have one of the several provisions for taking up vibration. Place a cut-off cock at the tank and one near the carbureter. Place all connections where they are accessible, and if possible always in sight.

If your purse permits, have a small electric lighting plant for the cabin instead of oil lamps.

Copper sheathing in the engine space costs little and avoids much danger. A drip-pan with drains leading outboard should invariably be placed under the gasoline tank, except where the tank is on deck. In one boat a drip-pan has been placed under the engine, and it collects all leakage and oil drip, keeping it out of the bilge. This pan is kept well cleaned and the owner considers it a prime aid to cleanliness and safety.

The engine space should be kept well ventilated while running.

Have the flooring so put down that any or all of it can be instantly taken up.

Every boat up to thirty feet should carry at least one chemical fire extinguisher; and above thirty feet two or more. If only one, place it where it can be reached from the companionway, and if more than one place them as far apart as they can be and still be easily reached.

A couple of pails, one of which has a line always fast to the bail, will prove handy in case of a fire, that is, *not an oil fire.*

One cautious skipper always carries a big pail of sand in his after locker, to prevent the spread of any oil blaze.

Rhey T. Snodgras, Narberth, Pa.

About Fire Extinguishers.

IN the first place, the most efficient protection is in the exercise of care and common sense. Spilling gasoline and cylinder oil about where a back-fire from carbureter, an electric spark or a match may touch it off is simply to invite disaster, and emptying oil from base of motor into bilge, as is frequently done, is nothing short of criminal carelessness. Gasoline vapor is heavier than air and will settle to the bottom of the boat and lie there indefinitely, and a boat should have part of the cabin or cockpit floor taken up occasionally when there is considerable air stirring and have a thorough airing out.

There is nothing that verifies the adage "An Ounce of Prevention, etc." more than motor boating, and by its use one can go from one year's end to another without recourse to his fire fighting apparatus, although it is well to be equipped for any emergency.

In an open boat the danger of fire is reduced to a minimum. A little sand and a "Pyreen" extinguisher will do. In the cabin boat its size must determine the amount of equipment carried. If it is where it can be got at readily nothing beats sand for gasoline fire. Have some galvanized iron tubes rolled up by a tinsmith about two feet long and two or two and a half inches diameter with a cov-

er fitted on one end. Fill these with a mixture composed of fine sand, two parts; and bicarbonate of soda, one part, well mixed together, and keep in locker or any convenient place. These will handle a small fire if it can be reached and the operator keeps his head. For a larger fire the best thing is a three-gallon copper extinguisher, such as approved by the U. S. Steamboat Inspectors, using the bicarbonate of soda in solution, and sulphuric acid in sealed bottle.

In using this extinguisher bear in mind that it is not the fluid itself which puts out the fire but the carbonic acid gas which it generates, which being heavier than air, settles and smothers a blaze just as a wet blanket would, and in using, try to direct the stream against some object a little above and beyond the fire so that it will spatter and spray over the fire, spreading the gas. Keep cool, don't lose your head, don't jump overboard unless you have to.

The fluid in these extinguishers has forty times the efficiency of water in extinguishing properties, and properly handled will accomplish wonders, but they must be protected from frost, or rather from freezing. Extra charges can be purchased in neat cases at from three to four dollars per dozen. The number of extinguishers carried must depend upon the size of boat. For a forty-footer I should say two; for a sixty to eighty-footer, four to eight.

The Pyreen extinguisher mentioned above is a much smaller machine operating by a plunger, the same as an oil gun, takes up less room where this is an object, is wonderfully efficient for its size and is the only device I have seen which will handle an acetylene fire. They are comparatively cheap, about $5, and I should advise at least one in every equipment, if a man wants his outfit complete.

The best fireproofing I have seen around an engine is to sheath with metal under the engine, carrying it well up the sides, and a pan under flywheel and carbureter.

F. A. Babcock, Seneca Falls, N. Y.

Practical Suggestions.

ABSOLUTELY the best protection against fire, on board a motor craft, is not to have any fire on board, except which is contained in the cylinders of the motor, but since humans must eat (and smoke generally), the proverbial "ounce of prevention" ought to find a place on every boat. And that same one-sixteenth of a pound, properly distributed, will obviate the necessity of carrying more than one or two small fire extinguishers.

Put a drip pan under the gasoline tank and drain outboard any gasoline that may leak from the same.

Use only high-grade seamless tubing for the gasoline line. Have as few joints as possible in the line and make good joints, using shellac on all threads, before screwing together. Run the pipe in plain sight, if possible. In the daytime any leak may be seen as well as smelled, and at night you can run your hand along underneath the pipe and if there is any moisture—well, anyone can easily detect the odor of gasoline on the fingers.

Keep your engine space clean. If your engine has a "plate" base, i. e., separate cylinders mounted on a flat bed plate, put a piece of galvanized iron or thin copper between the plate and the bed timbers and let it project about six inches all around. Cut diagonally into the corners and turn up a two-inch edge, on the forward end and the two sides, using solder to make a tight joint at the corners.

At the after end of the engine cut off the portion of the metal which has been turned up to form the sides of the pan. Bend the whole remaining end to a V shape and solder in two end pieces cut to fit. This completes the pan, and will effectually prevent all drip from the carbureter or connections from finding its way into the bilge as well as being a "dirt discourager" of the first quality. The engine naturally being lowest at the after end, all oil and gasoline finds its way into the catch basin from which it can easily be removed.

If your engine is supported on arms, a more elaborate pan becomes necessary, as it must extend entirely under the engine, ample openings being left at the sides, so that the pan may be wiped clean.

As an extreme precaution the engine space may be lined with sheet asbestos, protected by thin sheet metal to prevent tearing. The galley stove may be surrounded by a similar sheathing, as may also any wooden surface, which comes in close proximity to the exhaust pipe.

Store all lanterns in the regulation metal-lined lamp locker, which may be anything from a second-hand ice-chest or tin biscuit box to an elaborate affair that costs many good American dollars.

In conclusion I wish to insert a few don'ts which may help a beginner. Don't keep any parlor matches on board. Don't fail to have all lights as close as possible to the cabin roof, gas hangs close to the floor. Don't look for gasoline leaks with a lantern or match, or you may not stay to stop the leak. Don't think that a drip pan and catch basin under the engine isn't necessary, the Kitcinque didn't have one, and we wonder where she is.

With a boat protected against gasoline and oil getting into the bilge, the liability of fire is reduced to a minimum, and it will take far more than a carbureter back-fire to send such a craft to "Davy Jones."

"Igniter."

The Importance of Proper Installation.

ONE of the first things to be taken into consideration in preventing fire aboard is the installation of gasoline tanks. This should be as perfect and complete as possible. Practically the whole danger is in the oil finding its way into the bilge, and when mixed with the correct amount of oxygen it needs but a lighted match or an electric spark to cause an explosion and fire.

Tanks should be constructed of seamless steel, tinned, or better, of copper, with splash partitions or bulkheads arranged in the interior and set in a drip-pan fitted with scuppers. Whether the tank or tanks are located forward or aft they should be in separate water and oiltight compartments. The tank when built to conform with the shape of the boat should be strongly braced against the sides of the hull and not set upon a couple of beams, but on a solidly built floor or support. Fifty gallons might be taken as an average quantity for motor boats to carry in one tank, and when it is remembered that gasoline weighs about 6¼ lbs. a gallon it can readily be seen how necessary it is not to let the tank dance in a seaway. Even carefully made and tight connections in the piping and joints would work loose in a short time, and gasoline would leak where it could do the most damage—under the cabin floor.

Oil and watertight bulkheads should be built about 6 inches forward and aft of the engine. If the motor is located within the cabin the bulkheads can come up to the flooring. Cement the bottom of the boat or line this compartment with a thin sheet of galvanized iron and asbestos and, of course, the underside of the flooring. Oil dripping from any part of the engine or carbureter can then be wiped or pumped out and will not soak into the hull—should the oil catch fire it could easily be extinguished, as it would be confined to a comparatively small space.

The subject of ventilators should not be overlooked. An electric blower or a cowl with a shaft of not less than 4 inches in diameter should lead down into the bilge near the engine. The gasoline vapor would be carried off, thereby minimizing chances of an explosion. Shutters or small sliding panels should be in the sides of the box, if the engine is in the cockpit.

The additional amount of expense and time necessary to complete an arrangement that will greatly eliminate this danger, will be thought insignificant, when the possibilities of fire in a badly equipped launch are considered.

L. Kromholz, New York.

Drip Pans and No Cigarettes.

UNQUESTIONABLY the first precaution should be to see that the gasoline is properly "piped in." The fuel tank should be as far forward as possible, and should be separated from the remainder of the boat by a water-, and if possible, air-tight compartment or bulkhead. Copper tubing should be used of sufficient size to prevent choking up and a shut-off valve should be placed close to the tank while a regulating valve should be placed near the carbureter. To prevent back pressure, a coil should be made in this copper feed pipe as close to the carbureter as possible.

A bucket of sand should be carried on all large boats and hand fire extinguishers (dry powder variety) in the smaller craft where sand buckets would occupy too much room. A syphon of soda will do wonders when properly directed on an oil flame.

While a cabin should be kept locked when not in use, it is painfully evident that some means of ventilation should be had at all times. The collection of gases in these cabins is responsible for many explosions, but if a circulation of air were always in evidence, this gas could not collect. The cabin would smell sweeter anyhow, and if not for safety, this precaution should be taken. A single opening on either side would be sufficient for the purpose.

To prevent the nasty collection of oils and grease which are usually found around the base of any engine, a sheet of galvanized iron or copper might be placed under the engine before mounting it. This would be shaped to conform to the running parts and so constructed would catch the drip. The engine bed bolts would pass right through this, and it would be so securely fastened that to work loose would mean the loosening of the engine itself. From this metal "scoop" the oils and water could be easily cleaned and besides it would prevent this collection of oils and grease from saturating the frame and planking.

The exhaust piping should be covered with asbestos even when it is water cooled. When this is done it may be piped under the flooring or seats without danger.

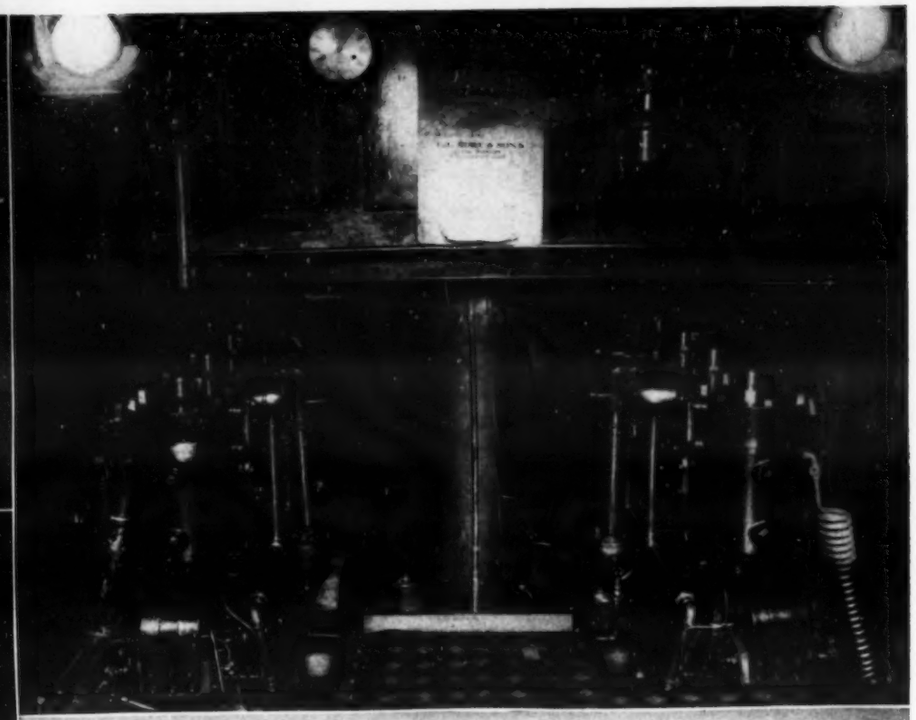
No cigarettes—should be your motto. If you must smoke, smoke a pipe, but don't allow anyone to sit on top of your gasoline tank and pull away at the coffin tacks. No, I am not a crank on cigarettes, but they make a bad mixture with gasoline.

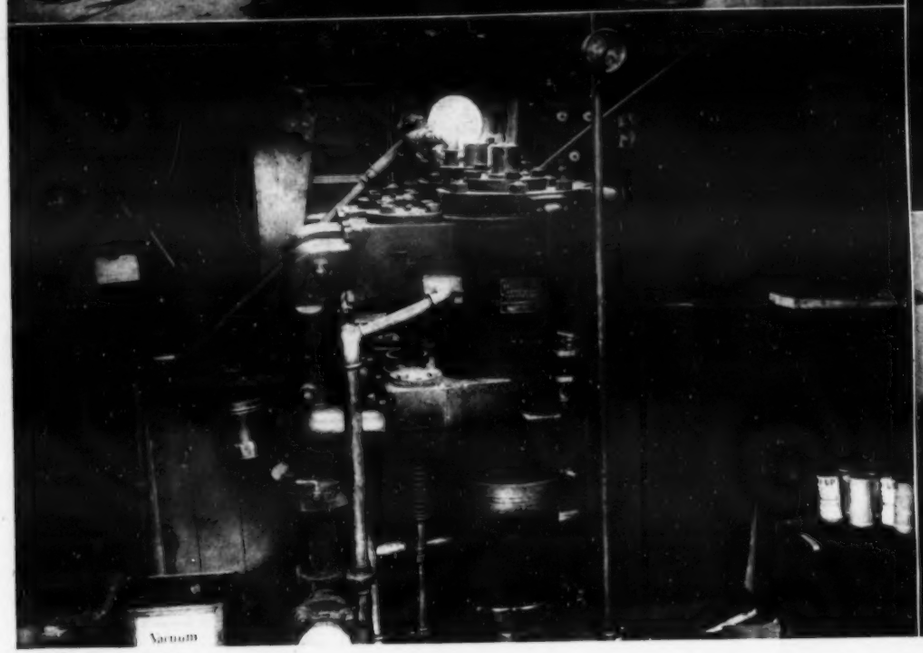
C. C. Burnham, Boston, Mass.

About the Third Question.

BECAUSE of the very large number of good answers to the first and second questions in this month's contest and the importance of the matter taken up in the second which warranted our printing more of the answers to it than we usually wish to, the answers to the third question—that regarding handicapping—will be held over for the next issue. We have a large number of good answers to this question on hand and they will make interesting reading. Mr. Francis King, of Kingston, Ontario, is the prize winner.

Omitting the answers to the third question from this issue makes it necessary to have but two new ones for November, which will be found on page 23.

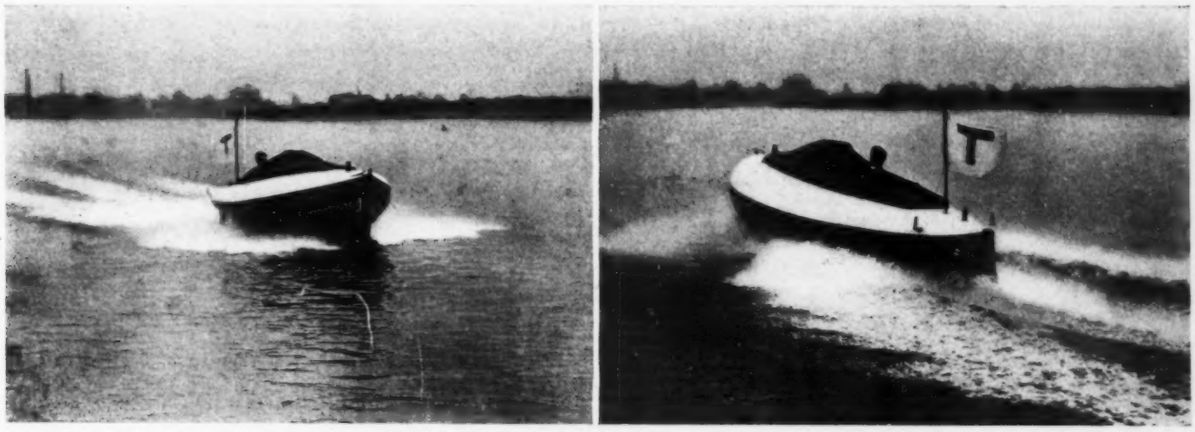




Photographs by Levick.

Down below in two auxiliary fishing boats.

Above at the left and below at the right are photographs of Libby and Sarah O'Neil, two fishing boats which deliver to Fulton market in New York. Like many others of these craft today, they are equipped with gasoline motors in order to keep up with competition. Many wonder what a motor looks like after it has been in use on a boat of this kind for a short time, and to show them we had the other two photographs taken. Libby has two Standards (above at the right), and Sara O'Neil a Richmond (below at the left). As will be seen, the "ship shape" condition of things is in decided contrast with what one would naturally expect after a glance at the decks.



Tadpole running at speed, showing bow and sternwaves and the sharp stern.

Tadpole—A British Skimming Boat.

REMARKABLE in the extreme is the latest product of that expert at things marine—Sir John Thornycroft—who is the designer of Tadpole, the 22-foot skimming boat, pictured here, which has shown herself capable of phenomenal speed by traveling at 27 knots. She is remarkable, too, in that even with her ability to go so fast she provides comfortable accommodations for a crew of four.

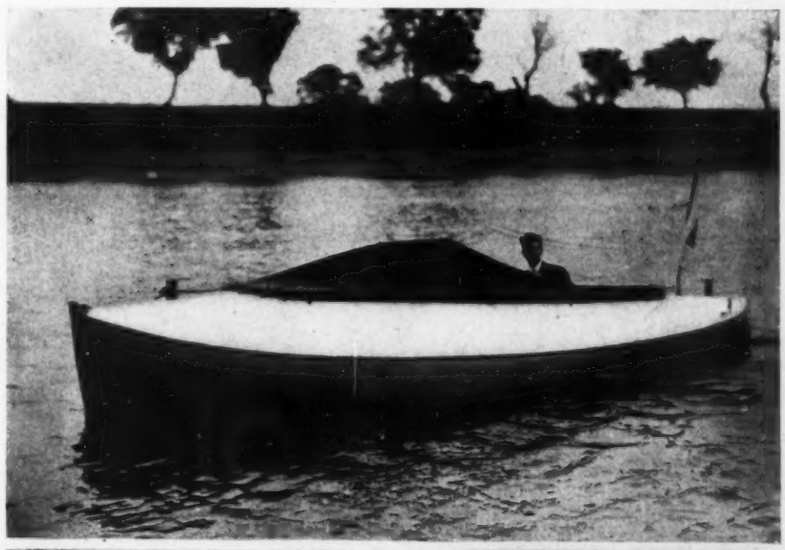
Tadpole combines the principles of boat and hydroplane. She "boats it" at slow and skims at high speed. In appearance under all conditions, says the Automotor Journal of England in describing her, the new craft looks like a boat pure and simple, but one having an abnormally developed forepart, which makes the name "Tadpole" unusually appropriate.

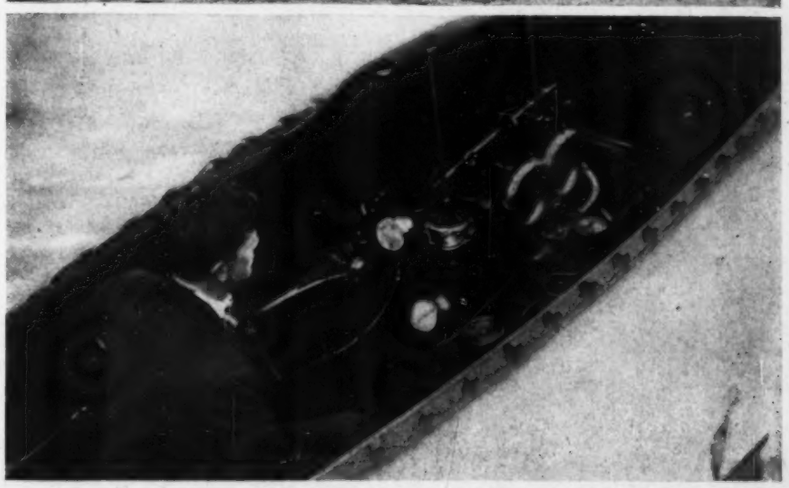
With a beam of 6 feet 10 inches there is plenty of room all round the engine, but right aft the cockpit narrows so much with the fine lines of the stern that the transverse seat placed there is only just wide enough for one. The hull, which is built of single-skin mahogany, has very peculiar lines which are not easily described. The bottom of the boat is to all intents and purposes flat, although actually it has a very slight radius in transverse section. Some 3 feet aft of the center, the bottom of the boat begins to run up towards the stern, and at the exact point where this change of slope takes place there is also a slight change of level, constituting a very small step, which, however, is of nothing like the proportions of the notch which commonly forms a feature of the hydroplane hull. See the approximate sketch on page 48.

Its object, however, is the same, which is to break away the water from its adhesion to the hull aft, and thus to prevent the suction on the stern which would otherwise destroy the effect sought. Under the bows is a web placed edge on to the direction of the travel, and carried by this web is a spade-shaped plate which juts down like an extended foot and just touches the surface of the water when the boat is skimming. Under these conditions the contact between the hull proper and the water is limited to an area which it is difficult exactly to define. This surface must not in any way be regarded as a separate member like the foot. It is merely a portion of the hull itself, and can vary if necessary from the proportions shown in the sketch. The pointed entry of the shaded surface representing the main plane is due to the boat suction of the hull, while the sudden cessation of the run as represented by the straight line is due to the aforementioned slight notch. Aft of this point and forward of the main plane the entire hull is out of water when the boat is skimming, and under these conditions it must be borne in mind that the load is supported by hydrodynamic reaction due to the communication of downward momentum to the water by the action of the planes, and not to the static displacement of a volume of water equal to the weight, as is the case when part of the hull is immersed when the vessel is traveling as an ordinary boat.

The propulsive power is developed by a 4-cylinder engine having a bore and stroke of 4 inches by 7 inches, and it is estimated to give 58 h.p. when running at 1,500 r.p.m.

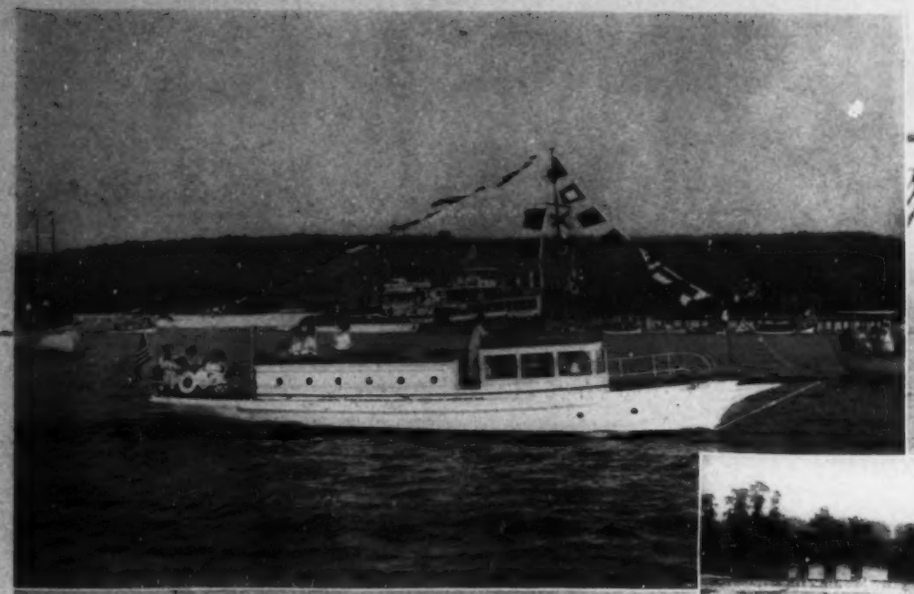
Various propellers have been tried. The one with which a speed of 27 knots in an average of six runs, and a total load of 1 ton, has been obtained, has a diameter of 18 inches.

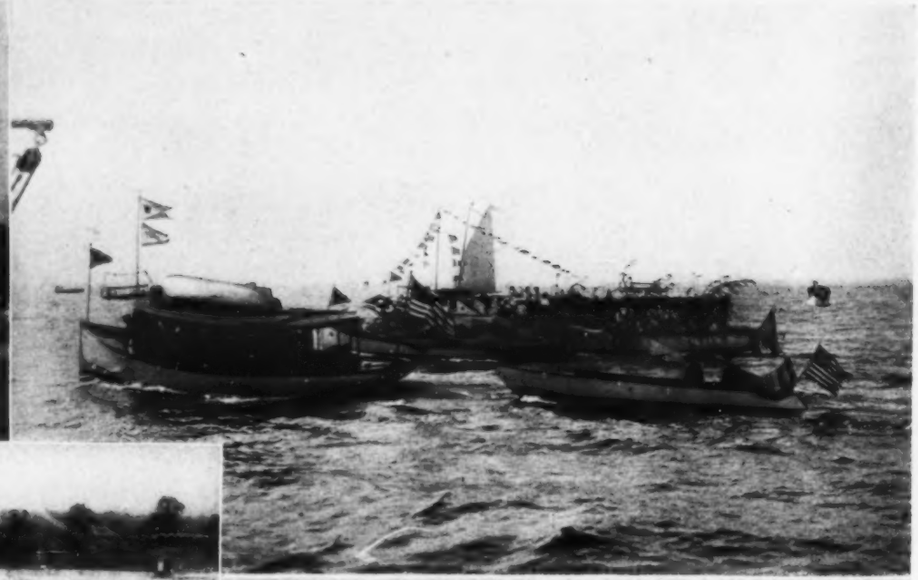


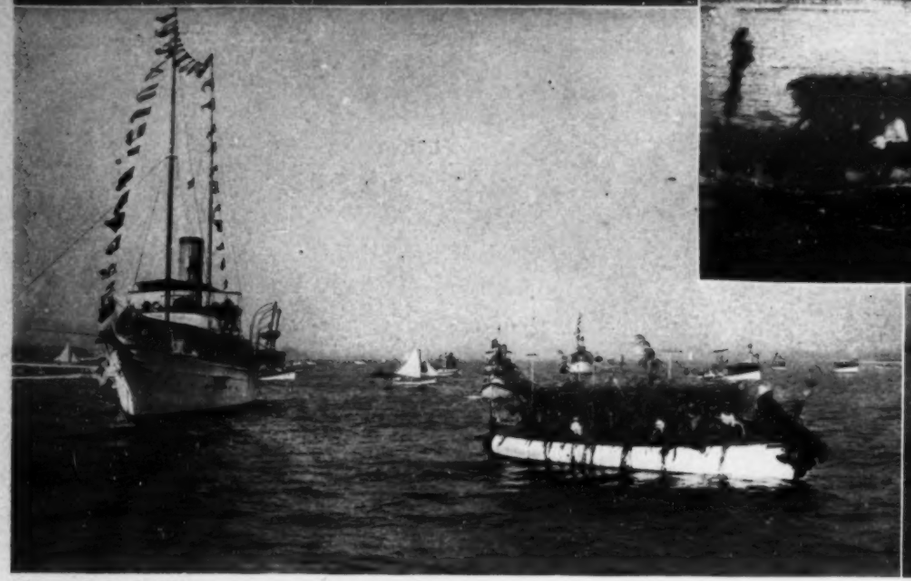


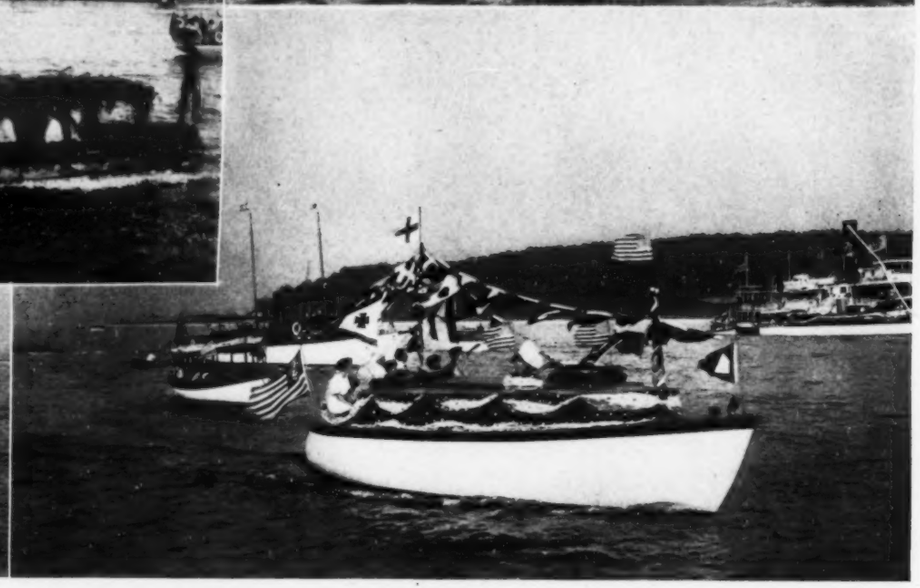
The peculiar lines are to be noted in the upper view, and the motor, with "figure 8" manifold, in the lower one.

SPEED AND SPRAY









Photographs by Levick.

The Huntington, Long Island Motor Boat Carnival.

Something like two hundred motor boats, from Huntington, Sea Cliff, Northport, L. I., and other nearby points, most of them being decorated to an elaborate degree, as our photographs show, participated in the recent motor boat carnival held in Huntington Harbor. The decorations of some of the boats were not only especially attractive but decidedly unusual, one of them being almost completely covered with rockweed and another dressed up in hay, corn stalks and a fine line of vegetables in season.

Among the Clubs

Chesapeake Bay Clubs Form Association.—A move which will have an important effect on the development of the motor boating sport was the recent formation of the Chesapeake Bay Racing and Cruising Association. Such an association permits better organization of the sport, prevents conflicts in dates, and is effective in many other ways. The following clubs compose the association: Baltimore Yacht Club, Maryland Motor Boat Club, and Baltimore Motor Boat Club, all of Baltimore; Hampton Roads Yacht Club, of Old Point Comfort, Va.; Chesapeake Bay Yacht Club, of Easton, Md., and the Capital City Yacht Club, of Washington, D. C. The association has purchased the Wetherill place at Oxford, Md., a fine piece of property on the Strand, with over 500 feet water front.

Motor Boat Club of Buffalo.—Work is progressing on the new club house of the Buffalo Motor Boat Club on Motor Island, and it is expected that it will be ready for use on the occasion of the club's Hallowe'en celebration, October 30. The total cost of the new club house is to be $14,370, and the finances of the club are in good shape to meet this expenditure.

Sea Isle City Yacht Club, Sea Isle City, N. J.—The club has bought property with 300 feet frontage on the Inland Waterway, and has advertised for plans for a new club house to cost $10,000. A most successful season, in which its members carried off their full share of the prizes in the big racing events along the South Jersey coast, has just been closed. Commodore Edward W. Wells presented the season's prizes to the winners, at the club banquet held on the evening of Labor Day. John J. Coyle's speed boat, Mary C., headed the list of winners with four silver cups.

Auburn Boat Club, Auburn, Me.—The Auburn Boat Club, which is the gathering place for the motor boatmen on Androscoggin river, has been building a fine new club house this season, and recently celebrated the formal opening of its new home with races and an evening carnival. The club was only organized last winter, but is in a very flourishing condition, with a large percentage of active boat owners. The officers are: Commodore, John R. Webber; vice-commodore, J. R. True; secretary, Fred L. Leavitt; treasurer, C. E. Merrill; fleet captain, E. C. Bean; measurer, Henry Haskell; handicapper, Roland Whitehouse; directors, Asa Cushman, Jr., Dr. Ernest Wentworth, John H. Merrill, R. A. Lord.

New Haven Motor Boat Club, New Haven, Conn.—This club was only recently organized, but has conducted a successful season of racing events, and has comfortable quarters at the foot of Hamilton St., in the old club house of the New Haven Yacht Club. The following officers have been elected for the coming year: Commodore, John McGrail; vice-commodore, Edwin P. Thomas; rear-commodore, James H. Bradley; secretary, Charles P. Stormont; treasurer, George B. Keller; fleet surgeon, Dr. Willis H. Crowe. Board of governors: Charles P. Stormont, Emil Schuerman, George B. Keller.

Tacoma Yacht Club, Tacoma, Wash.—On Labor Day the Tacoma Yacht Club celebrated the opening of its new club house, and on the same day held the annual regatta, one of the events being a 75-mile cruising motor boat handicap race. The new house was erected at a cost of $3,000, at the end of the Northern Pacific fill, facing the city waterway.

Cometchi Yacht Club, Trenton, N. J.—The club, which was organized this season with 65 members, recently filed articles of incorporation with the Secretary of State. The club's quarters are at the foot of Cliff St. The directors are Charles Moses, Daniel Vanderveer, and Peter Walker.

Falls Cities Motor Boat Association, Louisville, Ky.—On September 15 a meeting was held of motor boat owners on the Ohio river in the vicinity of Louisville, and the Falls Cities Motor Boat Association was launched. P. C. Donaldson was made chairman of the organization, and Clarence Walker secretary and treasurer. Two committees were named at the meeting, as follows: Racing.—J. C. Kerbel, James Howard, I. J. Campbell, H. Wanner, John Hutchings. Finance.—James Howard, C. S. Gilbert, F. A. Mudgett, Walter Greiner, Charles Meehan. The new association will hold its first regatta at Louisville, October 2, on the Ohio river, between Twelve-Mile Island and the Big Four Bridge.

Circle Bar Motor Boat Club, Wheeling, W. Va.—The Circle Bar Motor Boat Club recently held its annual election of officers, which resulted as follows: Commodore, W. Thornburg; vice-commodore, E. Bremer; secretary and treasurer, Earl E. Teter; fleet captain, W. Teter.

Nyack Motor Boat Club, Nyack, N. Y.—On September 10 sixteen of the motor boat enthusiasts of Nyack got together to take the preliminary steps to organize a club. Louis V. Cooper was made temporary chairman, and Andrew F. Bogert, secretary. The following committees were appointed: Committee on charter, constitution and by-laws, Victor Ackerman, Howard Garner, A. M. Gage, D. M. Crombie, Henry Doersch; committee on colors, W. H. White, Charles Provost, J. O. Hesselgrave; nominating committee, James Zabriskie, Howard Garner, Andrew F. Bogert. It is expected that the club will start with a membership of forty.

White Streak—A "home-made" 21-footer with 3-foot beam. She has a two cylinder, 3½ inch bore Thrall motor, makes 13 m. h.p., and belongs to Robert C. P. Henkel, of Detroit, Mich.

Motor Boat Racing

Wolseley-Siddeley II.—The double page illustration in this issue shows the famous English racer running at 33 knots per hour. At Monaco, in the 100-kilometer race for the Coupe des Nations, Wolseley-Siddeley II averaged 34.2 knots. Since then, running in the unrestricted racers' handicap at Cowes, I. W., she covered eight miles in 13m. 31s.—a speed of 34.8 knots per hour. Needless to say, she is the fastest motor boat in the world, hydroplanes not being considered. Wolseley-Siddeley II is a 50-footer, driven by two 12-cylinder engines made by the Wolseley Tool & Motor Car Company, Ltd., each capable of developing 360 h.p. A remarkable feature of our photograph is the showing of the jet of spray shot out at the left. It was necessary very slightly to retouch this portion of the picture to get sufficient contrast in the enlargement. Absolutely nothing was added. It is an unique photograph.

Seattle-Bainbridge Island Race.—The Seattle, Wash., motor boatmen tried the system of handicapping on previous performance in running the long-distance cruising race around Bainbridge Island on September 4. This was their first experiment in conducting a long-distance race under this system, and it was an entire success, judging from the close finish. Dr. H. V. Wurdeman's Lady Mary finished first, in a little over four hours. She had had the advantage of 10m. 53s. handicap on the start, but was almost caught by the scratch boat, M. A. Davis' Xenial, which finished only 34 seconds behind her. The boat with the limit handicap, Jessie P. Martin's Nightingale, finished third, only 39 seconds behind Xenial. Clansman, Capt. Mrs. James Wood, the second prize winner in the Vancouver-Seattle long-distance race, was disqualified for exceeding the permitted allowance of 3 per cent excess speed over her trial run. Carl Schmidt's Sans Souci was disqualified under the same rule, although she was only seven seconds too fast on the long run. The consensus of opinion seemed to be that this system of handicapping was a success.

Southern Yacht Club's Closing Regatta.—The Southern Yacht Club, of New Orleans, held a most successful regatta on August 28. The sensation of the meet was the first appearance of Messrs. Jahncke and Farwell's new boat, Blue Wing II, a Smalley product, which cleaned up everything in sight. The speed boats raced 20 miles, five times around a four-mile course. The summary:

Start 4.30—	Finish.	Elapsed Time.
Blue Wing II	5.19.51	0.49.51
Jack Rabbit	5.31.50	1.01.50
Whiffen Puff	5.35.17	1.05.17
Gee Whizz	5.43.19	1.13.19
Blue Wing I	5.49.38	1.19.38

Blue Wing kept on just to show what she could do, and went around the course a sixth time, doing the 24 miles in 59m. 30s. Blue Wing II is 39 feet long, and has a Smalley engine of about 100 h.p. The cruisers, classes B and C, raced 8 miles, starting 2:30 P. M. Summary:

Class B—	Start.	First Round.	Finish.	Elapsed Time.
Mack	2.30.19	2.59.45	3.29.10	0.58.51
Trevor	2.40.00	3.11.44	3.42.53	1.02.53
Dorinda	2.30.20	3.01.20	3.33.19	1.02.59
Class C—				
Susie C.	2.41.11	3.15.18	3.50.01	1.08.59
Ziz	2.40.45	3.17.50	Withdrawn	

Lake Cobbosseecontee Annual Sweepstakes.—The annual motor boat sweepstakes race on Lake Cobbosseecontee, Maine, was held August 28. The boats went over a 5-mile course, and Burleigh Martin's Rabbit proved the winner. Summary:

Name. Owner.	Elapsed Time. M. S.
Rabbit (Burleigh Martin)	16.38
Atosis (B. H. Norris, Lynn, Mass.)	19.12
Alpha (Ralph W. Smith)	19.38
Bessie A. (Earle W. Moyes)	23.10

Vallejo Labor Day Regatta.—The Labor Day regatta at Vallejo, Cal., brought out a good field of entries, although several expected boats were disabled on the way to the races. The race for the semi-speed boats was won by Red Raven, of Sacramento. Winsum, of Sacramento, second, and Opitzah, of Vallejo, third. Louise, of Sacramento, won in the full cabin cruiser class, and Liberty, of Belvedere, took the second place. In the open cruiser race, first prize went to Opitzah, of Vallejo, second, Mowitza, and third, Marathon, both of Vallejo.

Erie Basin Yacht Club's Staten Island Race.—The 50-mile race of the Erie Basin Yacht Club, of Brooklyn, around Staten Island on September 12, drew an entry list of eight cabin cruising motor boats. Silby King's Elizabeth was the first boat to finish, pressed closely by Dr. Patterson's Pvyram, one minute behind. The start was made from Erie Basin at 11:05 A. M. Summary:

Boat—	Finish. H.M.S.	Elapsed Time. H.M.S.
Elizabeth	4.04.00	4.59.00
Pvyram	4.05.00	5.00.00
My Girl II	4.40.00	5.35.00
Ernestine	6.49.00	7.44.00
Anna H.	7.36.00	8.31.00
Agnes B.	Did not finish	
Osprey	Did not finish	
Normalita	Did not start	

La Truda's Victory Over Hoosier Boy at Buffalo.—On September 11 there was a battle royal on the Niagara river, at Buffalo, between Harry T. Vars' La Truda, of Buffalo, and J. W. Whitlock's Hoosier Boy, the Western P. B. A. champion, in the race for the Pratt & Letchworth trophy. La Truda won by 14 seconds in the 20-mile race. The summary:

	Start.	10 M.	Finish.	Elapsed Time.
La Truda	4.40.03	4.59.55	5.20.13	40.10
Hoosier B.	4.40.03	5.00.11	5.20.27	40.24
Buffalo II				47.43

Red Head did not finish.

Average speed, miles per hour: La Truda, 29.84; Hoosier Boy, 29.75.

October

Oct. 1—Hudson-Fulton Naval Parade, New York to Newburgh. Motor Boat Squadron.
Oct. 2—Falls Cities Motor Boat Association, Louisville, Ky. First Regatta.
Oct. 2—Hudson-Fulton Motor Boat Races at Newburgh, N. Y., for open launches and cruising boats.
Oct. 3—Pacific Motor Boat Club, Belvedere, Cal. Cruise to Oakland.
Oct. 4-9—Upper Hudson Celebration Events, Yonkers to Troy.
Oct. 10—South Bay Yacht Club, San Jose, Cal. Motor Boat Races.
Oct. 10—Cleveland Power Boat Club. Club Races.
Oct. 11-16—St. Charles (Mo.) Centennial. Motor Boat Regatta, St. Charles Boating Association.
Oct. 31—Pacific Motor Boat Club. Squadron Cruise.

November

Nov. 9-12—Pensacola (Fla.) Motor Boat Club. Gulf Coast Regatta, in Bayou Texar.

Motor Boat Shows of 1910

Boston—Jan. 22-29. New England Engine and Boat Association, Mechanics Building. Manager, Chester I. Campbell, 5 Park Square, Boston.

New York—Feb. 19-26. National Association of Engine and Boat Manufacturers, Madison Square Garden. Manager, J. A. H. Dressel.

Chicago—Mar. 26-April 2.—First Regiment Armory. Manager, Chester I. Campbell.

New York to Bermuda Race, 748 statute miles—June 5. Motor Boat Club of America. Won by Heather, Richmond Lavering, Cincinnati, Ohio. Time, 80h. 56m. 18s.

Bermuda to New York Race—June 14. Crescent Athletic Club. Won by Ilya. J. G. N. Whitaker, Philadelphia, Pa. Time, 79h. 32m.

Block Island Race, Huckleberry Island to Block Island, 115 miles—June 19. New York Athletic Club. Won by Martha, Paul Kossek, New York.

Pacific International Race, Vancouver to Seattle, 230 miles—June 29. Pacific International P. B. A. Won by Soya, Capt. Edgar Ames, Seattle, Wash. Time, 21h. 30m.

Long Distance Cruising Races of 1909

New York to Albany and return, 270 miles—July 3. New York Motor Boat Club. Won by Martha, Paul Kossek, New York.

"Capital to Coast" Race, Albany to New York, 135.7 miles—July 5. Albany Yacht Club. Won by Irene II, S. W. Granbery, Newark, N. J. Time 14h. 25m.

Yachtsmen's Ocean Race, off Beach Haven, N. J., 87.5 miles—July 10. Yachtsmen's Club of Philadelphia. Won by Lady Maud, Dr. C. S. Street.

Marblehead Race, Gravesend Bay to Marblehead, 285 miles—July 17. Crescent Athletic Club. Won by Elmo II, F. D. Giles, Jr., New York.

Around Long Island, 252 miles—August 7. Colonial Yacht Club. Won by Irene II, S. W. Granbery, Newark, N. J. Time, 29h. 49m. 1s.

Lake Ontario Race, 290 miles—August 12. Rochester Yacht Club. Won by Satanita, Commodore Thomas E. Pritchard, Rochester, N. Y. Time, 27h. 22m. 28s.

Toledo Race, 164 miles—August 21. Toledo Yacht Club. Winner in Class A (over 55 feet), Roslyn, Marshall Sheppey, Toledo. Elapsed time, 14h. 47m. 20s.

Talks With Our Naval Architects.

Henry J. Gielow.

MR. HENRY J. GIELOW, of New York City, is a native of Wisconsin, and came to New York in 1887. Since that time he has designed some 360 yachts and vessels of all types. Among his recent notable designs are the large gasoline cruiser, Corinthia, and the magnetic survey yacht, Carnegie. Mr. Gielow, discussing recently the development of the large cruising motor yacht with our representative, said:

Henry J. Gielow

"The application of the internal combustion engine to marine propulsion is of comparatively recent date. The first decided steps in this direction were taken about eight years ago, when boats from 40 to 50 feet in length were equipped with internal combustion motors of from 15 to 25 h.p.; giving a speed of from 9 to 10 miles per hour. When the internal combustion engine proved a success in these smaller sizes, the development and introduction of larger and more powerful motors was very rapid. In 1902 cruising motor boats of about 50 feet in length were built that showed a speed of from 12 to 14 miles per hour. In 1904 a number of still faster boats were built, several exceeding 20 miles per hour. The next year a speed of over 27 miles per hour was attained and the following year a record of over 29 statute miles per hour was established. Since then much greater speeds have been obtained, as is well known by all interested in the subject.

"The earlier motor boats were patterned after the naphtha launch, having plumb stems, and overhanging sterns similar to the larger steam yachts, the naphtha tank being placed forward of the collision bulkhead, with the engine either amidships or near the stern. But as the dimensions of the boats increased and greater power was installed, the weight of the gasoline in the extreme forward end of the boats became excessive and was found objectionable in a seaway as it caused the boats to plunge heavily and ship solid water.

"In the later designs this objectionable feature was remedied by placing the tanks amidships, either in cylindrical tanks along each side of the engine room or inclosed in a separate watertight compartment. There was also a gradual development towards a better form of hull, the stem instead of being plumb was given a rake forward which gave a fuller and wider deck and made the vessel drier in a head sea. The overhanging stern has been discarded because of its "squatting" tendencies when the boat is driven at high speed. The whale-boat or compromise type of stern has been found especially suitable for cruisers on account of its seagoing qualities and its structural strength and is now used more than any other type for cruising boats of 60 feet in length and over.

"In the development of the larger motor boats errors were made by some designers because they assumed that all that was necessary was to increase in direct ratio the proportions of engines and boats, and that what had proved to be a success on a small scale would be equally successful in larger craft. The majority of builders and designers realized, however, that this was not true, and by a careful adjustment of proportions and details produced successful boats.

"At the present time there are in successful operation motor boats built of steel over 100 feet in length, that have all the conveniences, comforts and seagoing qualities of steam yachts of more than 40 feet greater length, and several new boats are being planned for 1910 that will have lengths from 125 to 145 feet from stem to stern, with a speed of from 16 to 19 statute miles per hour.

(*Continued on page 52.*)

Russara—Designed by Mr. Gielow for Bryan Heard, of Houston, Tex. She is 75 feet long and has two 25 h. p. motors

New Motor Boat Designs.

Venture—An Auxiliary Keel Centerboard Knockabout.

THE accompanying plans show an auxiliary keel centerboard knockabout, the only one of her kind and style built to date. Her dimensions are 37 feet over all, 28 feet 6 inches waterline, 9 feet 10 inches beam and 4 feet 6 inches draft. She is equipped with a 3-cylinder, 16 h.p. Fay & Bowen engine and reversible propeller, which gives her a speed of ten miles per hour in moderate weather. She also has a sail plan of 600 feet of canvas, which she uses when there is plenty of wind. Fred D. Lawley designed her, and she was built by the George Lawley & Son Corporation of South Boston, Mass., for Mr. Bancroft C. Davis, who has used her during the past summer at Georgetown, Mass. The story goes that when Mr. Davis first talked over with Mr. Lawley the style of craft he wanted he considered that he was venturing into the unknown in a measure, hence the name which he gave his boat—Venture.

Her deck trimmings and cockpit are all of mahogany. The cockpit is 9 feet long, containing steering wheel and seats on each side, under which are the gasoline tanks with a capacity of 37½ gallons each.

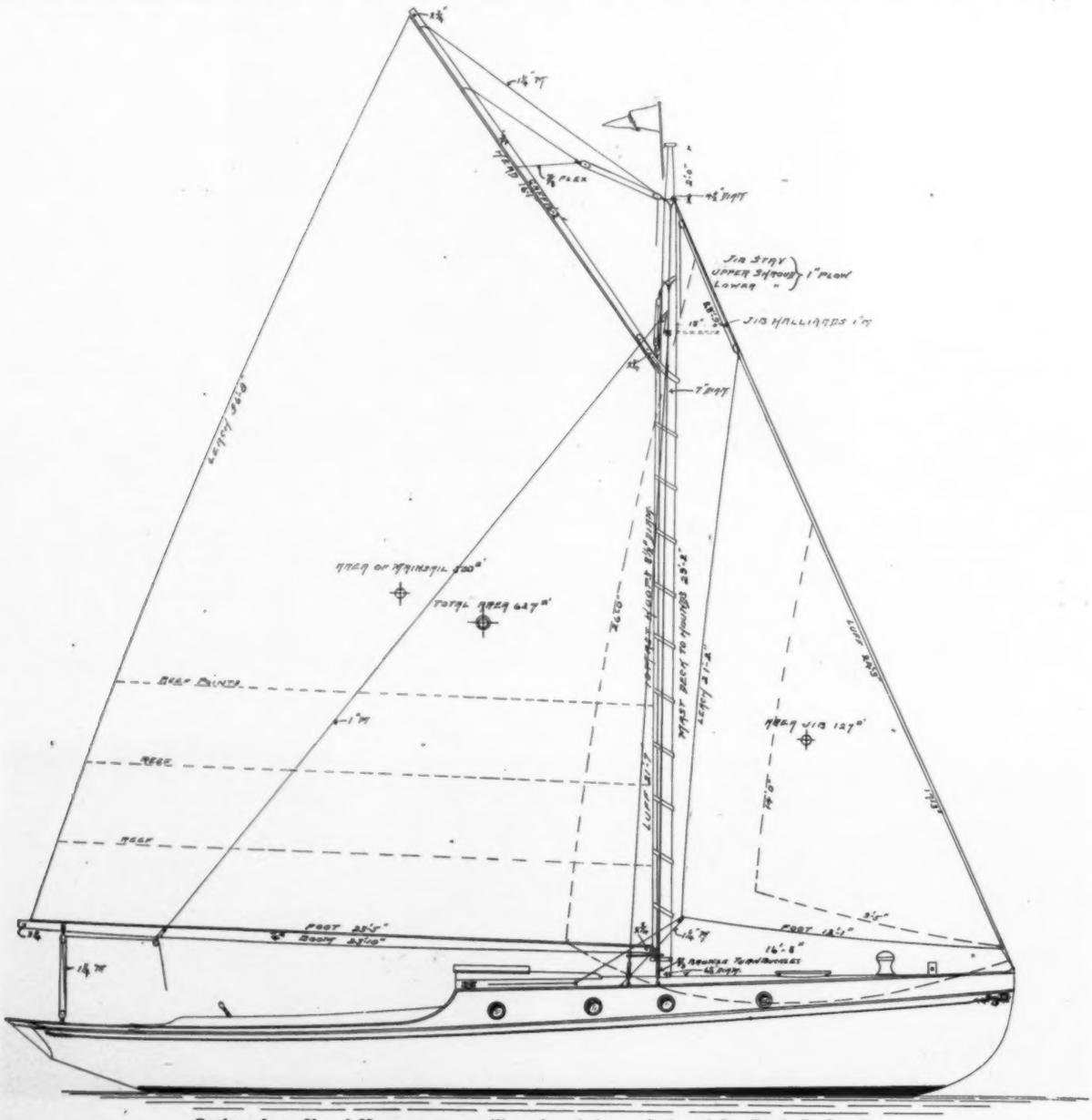
The engine is located under the cockpit and covered with a mahogany folding box, which can be used very comfortably as seats, when closed, or as a table. The engine control is within easy reach of the man at the wheel.

The cabin, which is 6 feet 6 inches long, is finished in butternut and mahogany; has extension transoms on each side with drawers under, and a hanging locker on each side of the after end. Six feet of head room is provided, and there are a pair of port lights on either side, just above a shelf.

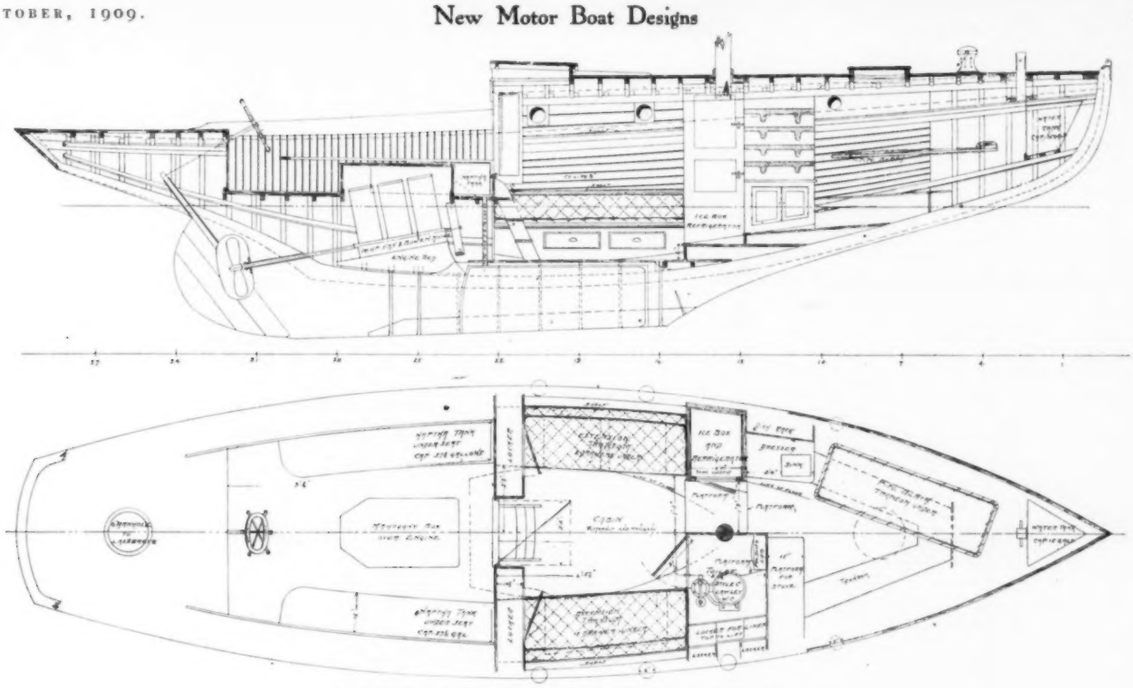
Leaving the main cabin, going forward, the toilet, which also contains the linen lockers and is lighted by a single port, is entered from the starboard side, and off the port side is the ice-box and refrigerator with tank beneath. Immediately forward of this are the dish rack, dresser and sink. Across to the starboard is a platform 15 inches wide for the stove. The ice-box is on a platform 6 inches above the floor of the main cabin and another platform, still further raised and slightly inclined upward toward the bow, begins in line with the after edge of the dresser.

Forward of the galley are the crew's quarters, containing pipe berth for one man, and a 15-gallon water tank in the extreme bow.

The sailing rig is very short, as will be seen by referring to the outboard profile, with everything inboard and sheets and halyards leading to the cockpit, in order that she may be handled easily by one man when either sailing or going under power. The sail area is made up of 127 square feet of jib and 500 square feet of mainsail. The boom is 23 feet 10 inches long, tapering from 4½ inches in diameter to 2¾ inches at the gooseneck and 3¼ inches at the clew. The mast measures 29 feet 2 inches from deck to hounds.



Outboard profile of Venture, an auxiliary knockabout, designed by Fred. D. Lawley.



Inboard profile and accommodation plan of Venture.

A Thirty Foot Cruiser.

THE cabin of this cruiser, which has been designed by L. Kromholz, New York, is separated from the motor room by a sliding door and contains clothes closets on either side, two wide transoms (7 feet 9 inches long) with lockers under, which, by bridging across, could accommodate three people. Two lockers, a 24 inch bookcase and writing desk are built in the forward end of the cabin, forward of which is the gasoline tank of 60 gallons capacity, located in a watertight compartment. The ice-box, sink and toilet room are on the port side of the motor room—the latter (3 feet 4 inches long) being entered by a door in the forward end. Lockers, dish racks, stove space and the companionway are all arranged to the starboard.

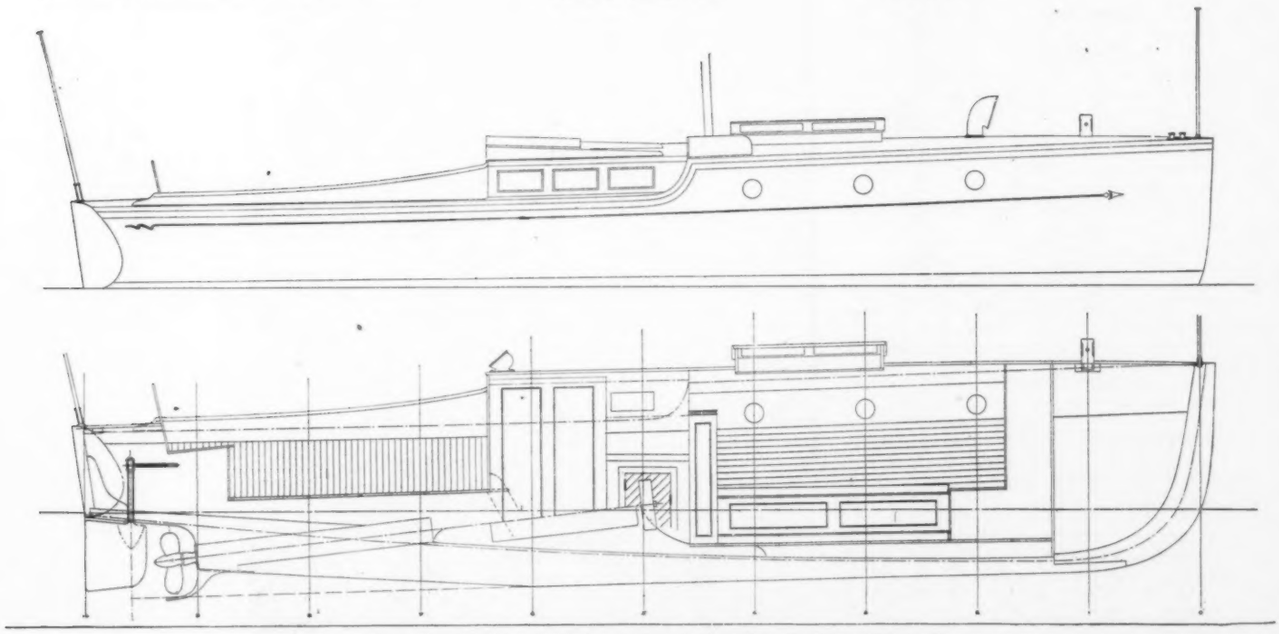
Whether the motor should be boxed in the cockpit or located in the cabin is a matter of personal preference. Both ways have their advantages and disadvantages, but by the latter arrangement the accommodations are greatly increased.

Venture under sail.

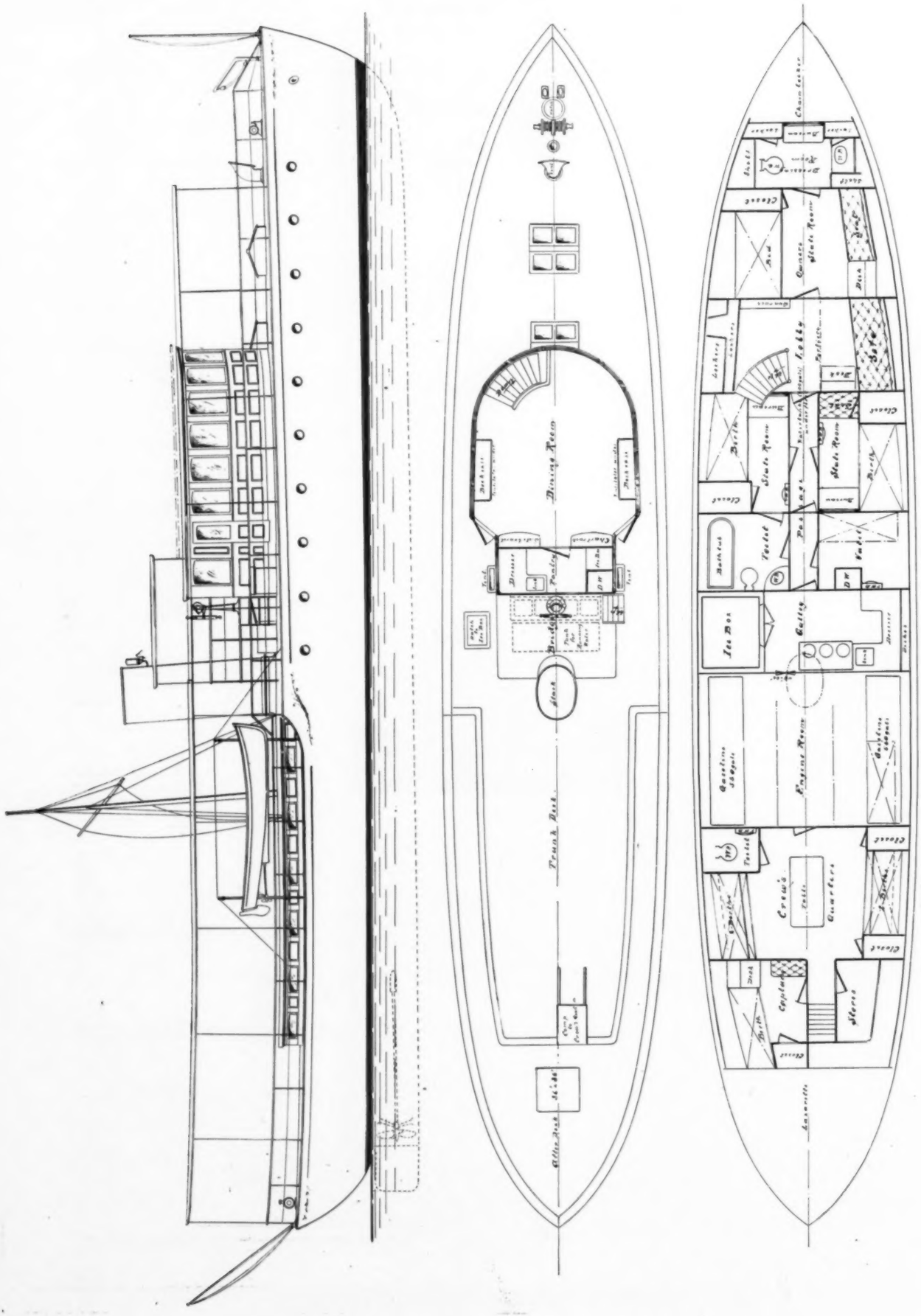
The motor room is thoroughly ventilated by the shutter in the companion door and by the six lights (6 inches x 14 inches) which are made to swing outboard and can be opened at least 3 inches in most any weather. The cockpit (8 feet 6 inches long) is watertight, self-bailing and left open for chairs, with the exception of the lazy back in the stern, under which is large stowage space.

The construction is of medium weight, and with a 30 h.p. motor this boat should develop a speed of 14 miles per hour. The dimensions are 30 feet 9 inches over all, 30 feet waterline; 2 feet draft, keel; 2 feet 4 inches draft, skeg; 4 feet freeboard, bow; 2 feet 4 inches freeboard, stern; 5 feet head room.

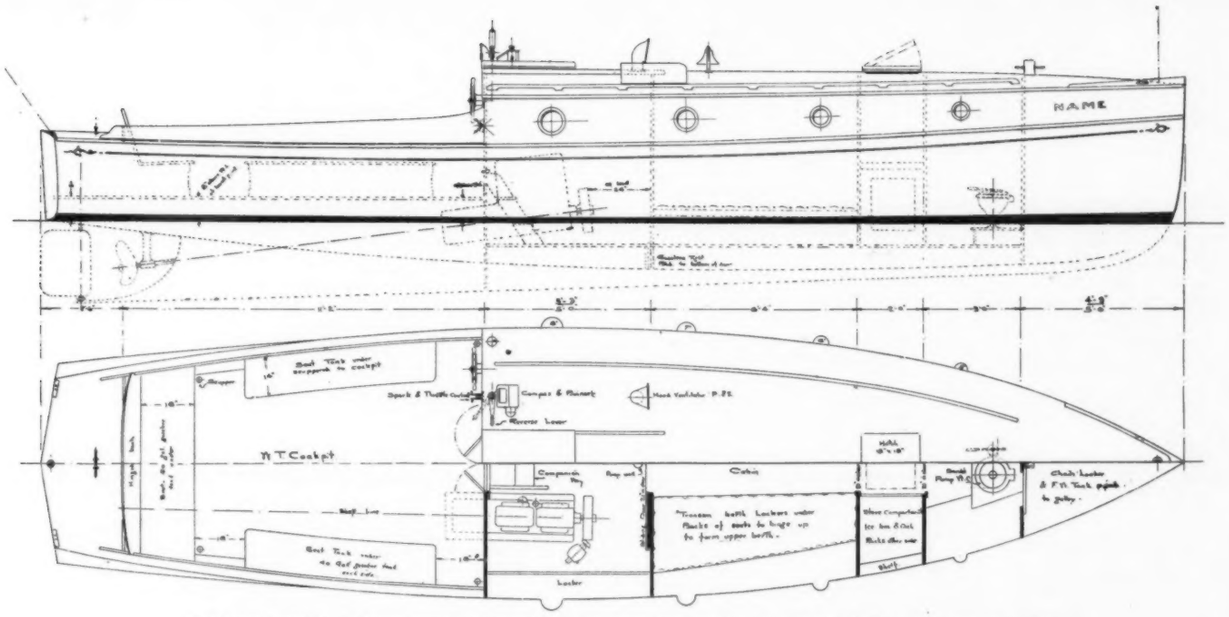
The flooring can be made lower than shown in the plan, and the draft is 2 feet 3 inches if a straight keel is used as shown in dotted lines on plan.



A 30-foot, flush deck cabin cruiser, designed by L. Kromholz.



Tekla II.—A roomy and comfortable 90-footer, designed by Cox and Stevens. (Description opposite.)



Outboard profile and accommodation plan of "all-weather" cruiser, by Bath Marine Construction Co.

Tekla II—A Comfortable 90 Footer.

THE accompanying illustrations and plans are of the 90 foot cruising motor boat Tekla II, designed by Messrs. Cox & Stevens, for Mr. Alessandro Fabbri, and now under construction at the yard of George Lawley & Son Corporation, South Boston, Mass., who have promised to deliver the vessel in New York on November 15th, in condition for a Southern cruise. In having this new Tekla built, Mr. Fabbri had in mind using her in the canals and in Southern waters, and also in the summer time along the coast between here and Bar Harbor, so that all these conditions had to be given attention.

The dimensions of the Tekla are: Length over all, 90 feet; waterline, 82 feet 3 inches; beam 17 feet; draft, 3 feet 6 inches. Her power consists of two 75 h.p. Craig engines, situated amidships, and a speed of 12 miles an hour is anticipated.

The accommodation plan shows that a most roomy and comfortable craft has been secured, and one that is not at all unattractive in appearance; also that due attention has been given to producing a seaworthy vesel and one that would be livable both in hot and cold weather.

The type is one known as the raised deck cruiser, giving full head room below forward, and sufficient height of deck to insure seaworthiness, while a trunk is run aft where the freeboard would otherwise be excessive; and the needed ventilation of the engine room is secured in this manner and also through a large stack used as an exhaust for the engines and for ventilating the engine room and the galley.

The owner designed his own quarters forward and this arrangement has been followed. The owner's state-room is well forward and is unusually large, being 10 feet long and of the full width of the vessel. It is furnished with a bed, wardrobe, sofa and desk, and forward of it is a large dressing room and lavatory, with bureau, clothes presses, toilet and lavatory. Just abaft the owner's state-room comes the lobby, into which the stairs from the dining room lead. This lobby has a full length transom on the starboard side, making a comfortable bed and desk with gun rack and ample locker space for storage of fishing and hunting material.

A passage way opens from this lobby on the center line, and runs aft to the galley. On each side of this passage is a large guest state-room with bureau, wardrobe, folding wash basin and sofa. On the port side, entering into one of these state-rooms, is a large bath room, with tub, toilet and wash basin; the floor of this room having rubber tiling. Opposite this bath-room, on the starboard side, is another single state-room that can be used as a guest's room or for the owner's man. The dumb waiter from the galley is recessed into this room, and the food is carried in this manner directly into the pantry, which is overhead in the aft end of the deck house. The galley runs all the way across the ship and is fitted with large coal range, an ice-box of unusual capacity, sink, dresser and dish racks.

After the galley comes the engine room, separated from it and from the crew space by steel bulkheads; on each side of the engine room are heavy copper gasoline tanks having a total capacity of 1,100 gallons. In the engine room is also situated an electric light plant, which not only lights the entire vessel, but supplies electricity for a powerful searchlight and also charges the storage batteries which are capable of lighting the vessel for ten hours' time.

After the engine room comes the space for the crew and a separate toilet and berths for four men, with necessary lockers, and after this again is the state-room for the captain on the port side and a large store-room on the starboard side, access to these quarters being by a companionway at the aft end of the cabin trunk.

The finish below is to be handsome, yet plain, and will be Colonial in style. The bulkheads will be paneled in white enamel; the doors will be mahogany, as will also all the furniture. There will be hot and cold running water in all the lavatories, and the boat will be fully found and equipped in every respect.

Mr. Fabbri has owned several other vessels, his last one being the auxiliary schooner yacht, Tekla, which he recently sold. The present vessel is the result of his long experience, and he has every reason to believe that he is now having built a craft that will be entirely suited to his requirements.

The arrangement on deck is very convenient, and a great deal of room is provided for the owner, as the plans show. The deck house and cabin trunk are of mahogany, handsomely paneled, and the deck house contains an unusually large dining room, after which is a pantry connecting with the galley by dumb waiter. In order to take care of the ventilation below, large ventilating trunks are carried up through the deck house, opening out on each side and arranged to look like articles of furniture inside, so that they are not at all unsightly and at the same time provide the necessary ventilation for the two guests' state-rooms. The lobby in the owner's state-room has individual skylights, in addition to a large number of air ports, and as the toilet and valet's room each have overhead ventilation, and the galley is ventilated by the stack, it would seem that the quarters should be comfortable, even in the hottest kind of weather. To take care of the cold weather experienced in Maine waters in the fall, a hot water heating device is being installed.

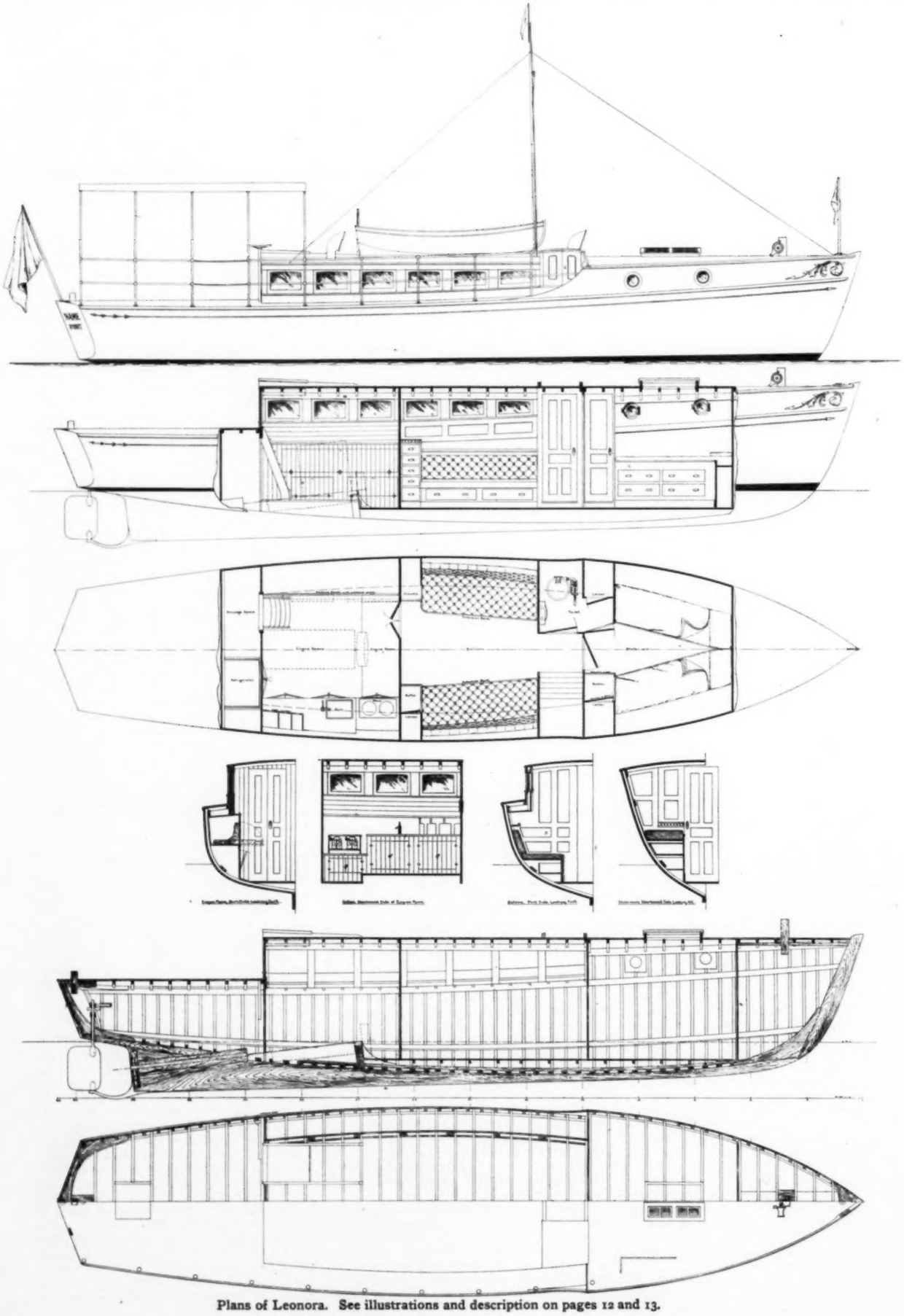
The top of the cabin trunk is kept flush with no obstructions, and is available for the owner its entire length; so that he has deck space from the extreme bow practically the whole length of the vessel. There is a large steering bridge just abaft the house, under which are running water tanks and skylight to the galley.

It is proposed to have the engine control arranged at the steering stand, so that the vessel can be controlled from on deck.

This is the second vessel of this size that Messrs. Cox & Stevens have already started at Lawley's yard for delivery this fall, and they have plans under way for a number of others. This is an indication of the direction in which interest in yachting is now tending, practically all the orders of any magnitude being for good-sized able cruising motor boats.

An All Weather Cruiser.

THIS boat was designed and built for Mr. J. K. L. Ross, of Sydney, Nova Scotia, and has been used by him off the coast of Nova Scotia. Mr. Ross desired a seaworthy, comfortable little cruiser, that could go out in all kinds of weather and one that would accommodate at least two people and a paid hand, but arranged so that four could be slept if necessary. This was accomplished by the backs of the transoms being hinged to form upper berths. He also desired a boat that would make a fair amount of speed, so that not too much time would be consumed in getting back and forth to the fishing grounds. He desired twin engines, to provide for extra precaution. The plans reproduced above will show how his ideas were worked out by the Bath Marine Construction Co., who designed and built the boat.



Plans of Leonora. See illustrations and description on pages 12 and 13.

The length over all is 35 feet; beam, 8 feet 3 inches; extreme draft, 30 inches; freeboard forward, 4 feet 6 inches; freeboard aft, 5 feet; displacement, 9,400 lbs. Over a measured course this boat developed 15 miles in rough water. She is equipped with two 4-cylinder Sterling engines, 4⅜ inch bore by 5½ inch stroke, which at 650 revolutions develop about 15½ h.p. each. The boat is lighted throughout with electricity, power being furnished by Apple dynamo and storage batteries. She also carries combination oil and electric running lights and an electric searchlight.

The carrying of a boat in davits on a boat of this size is probably a little unusual, but it worked out very well, with the exception of blocking the view somewhat, when making a landing, but, on the other hand, in long runs it was out of the way and also made a very good lounging place. The boat is framed throughout in white oak, frames being 1¼ inch square. The planking is of yellow pine in long lengths, galvanized fastened, and the trimmings are of golden oak. Inside finish is in cream enamel, relieved by oak mouldings and hand rails. A khaki awning formed by galvanized iron pipes, bowed over at the top, with yellow pine battens running fore and aft, covers the cockpit, making a substantial and attractive awning. A portable seat is designed for the steersman's comfort in long runs.

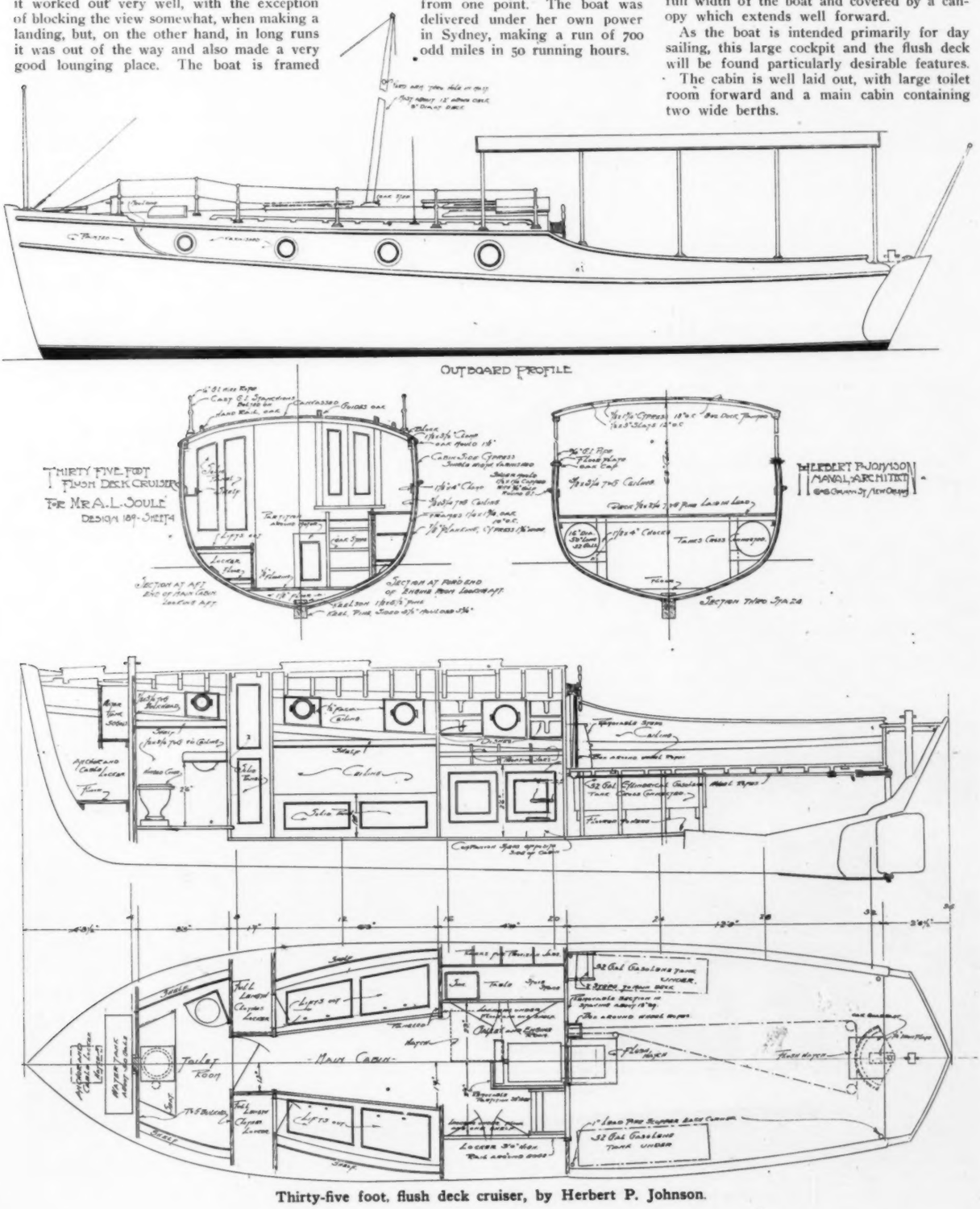
Controls for the engine are carried within easy reach from the steering wheel, so that the boat can be perfectly operated from one point. The boat was delivered under her own power in Sydney, making a run of 700 odd miles in 50 running hours.

A 35-Footer From The South.

THE accompanying plans of the thirty-five footer Undine, now building for Mr. Albert L. Soulé, by Fetterly, of New Orleans, from plans of Herbert P. Johnson, admirably illustrate a type of cruiser which is fast gaining popularity in those waters. Designed with no particular desire to crowd as much as possible into a given space, the accommodations both below and on deck seem particularly roomy for a boat of this size. The cockpit is clear 12 feet long, full width of the boat and covered by a canopy which extends well forward.

As the boat is intended primarily for day sailing, this large cockpit and the flush deck will be found particularly desirable features.

The cabin is well laid out, with large toilet room forward and a main cabin containing two wide berths.



Thirty-five foot, flush deck cruiser, by Herbert P. Johnson.

The engine and galley are in one compartment, easily accessible to the cockpit, with plenty of room for the cook or engineer to move around.

The water tank is high up forward, furnishing flowing water to the galley, and the two gasoline tanks, 52 gallons each, are stowed under the cockpit floor, where they are easily removable, and the piping to the engine is very short, and all in plain sight.

The motor is a 2-cylinder heavy duty Powell open base, 2-cycle engine, developing 20 h.p. at 500 R. P. M.

The boat will show a speed of nine miles per hour with the motor developing 20 h.p.

The lines of the hull are particularly fine and easy, for a boat of her dimensions, the bow having a clean entrance, flaring to a very powerful line at the sheer, making the boat dry in a head sea, while the stern sections are well rounded, avoiding any tendency to pound.

The ventilation of the hull has been carefully looked after, large swing ports being located in the sides, but the principal air circulation is through two large hatches in the cabin roof which admit an abundance of fresh air, and are perfectly rain and sea tight when closed. Forward of the toilet room bulkhead is a hatch to the chain locker, which ventilates the bilge, making a complete circuit under the floor of the cabin and cockpit, when the door in the cockpit staving aft is left open.

A light mast is provided for dressing ship and in case of accident to the motor the yacht would handle under sail well enough to get home.

The following are the principal dimensions: Length over all, 35 feet; length, load waterline 31 feet 10 inches; breadth, extreme, 9 feet; breadth, load waterline, 7 feet 10 inches; draft, 2 feet 6 inches.

Two "Keel Up" 40-Footers.

THE Valley Boat & Engine Co., of Baldwinsville, N. Y., have just completed for "Mat" McCarty and W. H. Martin, of Albany, N. Y., two 40-footers. The boats are exact duplicates in equipment and power, and built by the company's "Keel Up" construction; framed and planked over permanent moulds, the hulls are guaranteed just alike.

The design is one of the most successful from the board of the company's president and naval architect, Mr. Dwight S. Simpson. The length is 40 feet with a beam of 9 feet 2 inches, draft, 2 feet 8 nches, bridge deck type with continuous bulwark and V transom stern raking aft.

Forward, the deck forms the roof of the engine compartment and is equipped with a large cowl ventilator, screens for running lights, 6 by 6 inches king post, Gypsy windlass, folding anchor, with the usual complement of checks and cleats.

The "Keel-up" 40-footer, bow on.

Aft of this is the bridge deck where beside the steering wheel are the engine controls, reverse and the binnacle carrying a small liquid compass, the comparatively flat roof of the forward cabin making an admirable place to spread the chart case.

Next aft is the main cabin structure which is fitted with heavy plate glass windows hinging up to the ceiling and fastening when down with a patent cap which battens the windows tight against the entrance of water.

On the roof of the main cabin is carried the signal mast which may be quickly lowered when cruising under bridges in interior water. The after deck is surrounded with a pipe rail and no permanent seats are installed, the intention being to use wicker chairs.

Beneath decks, first forward, is the chain locker and between this and the engine room is a large wardrobe. Ample tool lockers are provided for by a thwartship seat in the forward end of the engine room, and sleeping accommodations are provided for with a pipe berth which during the day is folded against the side of the boat.

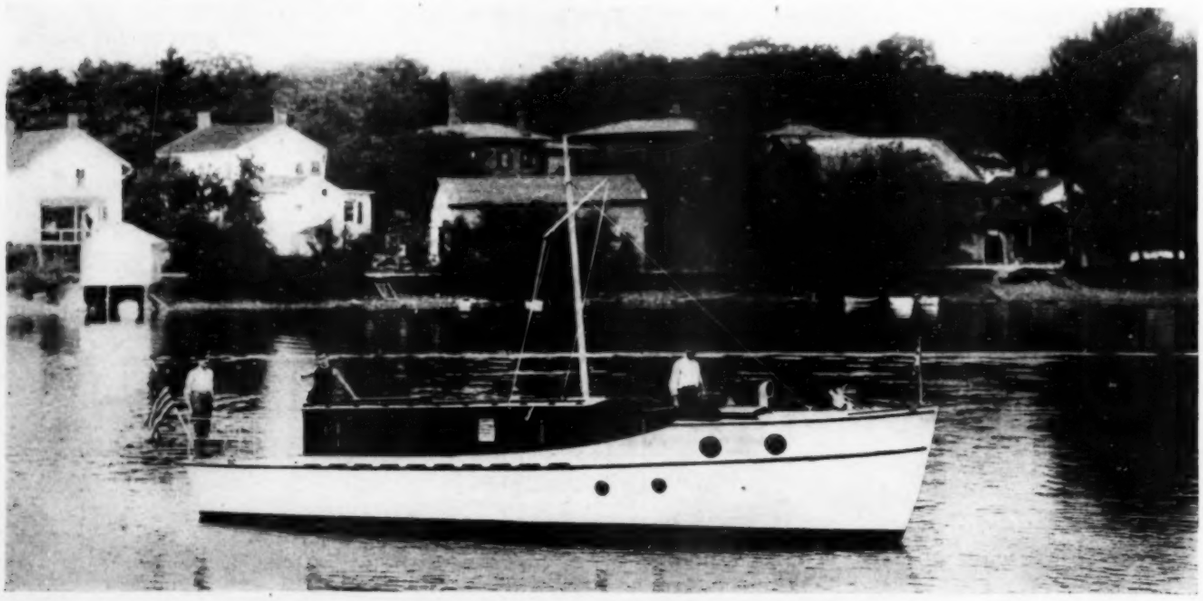
The space on the starboard side, just opposite the engine and under the bridge deck, is utilized for a real refrigerator, capable of taking 50 pounds of ice. This is accessible from the galley by a door in the engine room bulkhead.

The galley, which is just aft the engine room bulkhead on the starboard side, is well provided with permanent dish and cup racks with ample stowage. Cooking will be done on a blue flame stove and hot and cold water are available over a large white enameled sink, which is also fitted with a Sands pump. On the port side opposite the galley is the toilet with Sands equipment complete.

The main cabin is entered through a hatch from the after deck, provided with four permanent transom berths, upholstered with Kapok fiber mattresses covered with Moracoline. These make comfortable seats during the day and extend under the deck, making the berth amply wide for sleeping without an extension. Over these berths and fastened against the sides of the cabin is a narrow shelf on which may be kept pipes, tobacco and various small articles which one does not care to stow away. The cabin is divided by double bulkheads placed 18 inches apart, giving ample wardrobes, which are arranged so that you may actually stow clothes away in them as you would at home.

The power plant is a 30 h.p. Ralace motor with reverse gear. The engine also drives an air compressor providing air for whistle, and an Apleco dynamo with cut-out switch and voltmeter are wired to a storage battery, furnishing current for ignition as well as a very complete electric lighting system.

One hundred and thirty gallons of gasoline are carried in two galvanized steel cylindrical tanks under the after deck.



The 40-footer of the Valley Boat and Engine Co. described above.

Start of the tender race at Baltimore.

Maneuver Races at Baltimore.

How the Baltimore Motor Yacht Club Put Contest Suggestions Into Practice. The Tender and Boat Race and the Race with the Numbered Boards.

By Stuart Stevens Scott.

IN line with the maneuver race, as suggested by Mr. W. J. Forbes in MoToR BOATING for August, the Baltimore Motor Yacht Club held two such events on September 13, resulting in considerable experience for the contestants and no end of fun for the spectators. In one of the events the contestants became so mixed up and each so frequently disqualified himself that the affair was called off in order to satisfy everyone concerned.

But even at that the contests created so much interest that it is probable that they will be tried over before the season closes or, at least, next summer.

The first event was a combination tender and boat race of four miles, the instructions reading:

"Launches will be moored in front of the club house in a line. The respective captains will stand on the pier and, on signal, will row in their tenders to their boats, moor the tenders to the buoy, get under way, cover a course of four miles, return to their buoys, make fast and come to the pier. The winner will be the one reaching the pier first."

In this contest there were eight entries as follows: Sally, Capt. William Hellbach; Toby T., Capt. Albert Gross; Amelia, Capt. R. W. Price; Joe Guerin, Capt. James Peiper; Katherine B., Capt. Edward Burke; Belle, Capt. Edward Henry; Suwanee, Capt. E. S. Linthicum, and Caroline, Capt. L. E. Jones.

The tenders were lined up along the front of the pier and when the gun was fired there were eight splashes as as many men landed in their tenders and there was a lively scramble to the launches. That was really but the beginning of the fun for, in getting under way, there was a splendid exhibition of seamanship and the lack of it. One skipper got his mooring line foul of his propeller and he had to go overboard to get it free. Another didn't tie his skiff fast and it broke adrift, while one had engine troubles and another started off without having cast off at all.

Despite the difficulties, which the crowd thoroughly enjoyed, it was but a few minutes before all were speeding down the river. The return to the moorings was but a repetition of the start, while the finish brought redoubled interest in the rowing contest between the crews of Toby T., owned by Mr. Albert Gross, and Sallie, owned by Mr. William Hellbach.

Side by side the launches raced up the river and reached their moorings almost at the same moment. There was a scramble into the small boats and the pull for the shore began. The crew of Sallie had the disadvantage of the slightly longer pull; not very much, but just enough to allow the crew of Toby T. to get in 30 seconds ahead.

The summary for the race was:

Boat.	Owner.	Time min. and sec.
Toby T.	(Albert Gross)	25:00
Sallie	(William Hellbach)	25:30
Joe Guerin	(James Peiper)	28:06
Suwanee	(Dr. E. S. Linthicum)	28:30
Katherine B.	(Edward Burke)	29:00
Amelia	(Dr. P. W. Price)	32:01
Caroline	(L. E. Jones)	Disqualified

The other event was an "Obstacle" race, the instructions reading:

"The contestants will place themselves behind the line with tenders towing. Engines at a standstill. On gunfire boats will get under way and go to first mark (stakeboat). When the first boat is near the mark there will be thrown overboard short boards on which are painted numbers to correspond with the numbers given the contestants. These boards will be floated face down. Contestants will stop engines, get in tenders and get their proper numbers and then proceed to the second mark where there will be more boards. Then the contestants will proceed to the flagship and, in tender, transfer the boards to the committee."

Although the instructions were plain there was not one of the six contestants who did not, in some manner, disqualify himself. Four failed to stop their engines at one mark or the other, one did not go around the course as prescribed, while the other one failed to find one of his boards. It was afterward learned that he had run down his board and that it had caught under the bow of his boat, hiding it.

At the finish of the race, for they all got in within a few minutes of each other, the contestants swarmed on board the flagship like a lot of angry hornets, each one bent on lodging a protest of some kind against the other. The outlook was squally when the last man clambered over the side, holding only one board in his hand.

"Where's your other board?" half a dozen voices asked in one breath.

"There ain't any board; someone swiped it," he shouted, and the whole crowd burst out in laughter. It was this man that had run down his own board and he couldn't find it.

In view of the many protests the committee decided that the wisest plan would be to call the whole race off, but so much fun was had that it was voted to hold another similar contest in the near future.

The next event scheduled was a "slow" race of a quarter of a mile, the boat making it in the slowest time, without an engine stop, to be the winner, but it was so late in the evening that it was abandoned and a handicap cabin class race was held. The course was four miles. The summary was:

Boat	Start	Finish
Suwanee	6:06:30	6:30:30
Belle	6:00:00	6:31:45
Wigwam	6:08:30	6:32:17
Sally	6:10:30	6:33:19
Toby T.	6:11:00	6:33:20
Katherine B.	6:09:48	6:35:18
Amelia	6:11:00	6:33:34
Joe Guerin	6:10:30	6:38:52

Great was the surprise on Suwanee when the crew learned that they had exceeded their stated speed for the course by five seconds and were disqualified. Belle did even worse, exceeding her time by 1 minute and 30 seconds, so the prize went to Wigwam, which arrived at the mark on her time to the very second.

A Motor Boat Fish Race.

A NOVEL "stunt" was tried recently at the annual outing of the Manchester (Mass.) Launch Club. It is a scheme which ought to be productive of some amusing sport at almost any club. The conditions stipulated that the boats were to start on signal from the pier at Tuck's Point, each boat to proceed to any likely spot which met the approval of the crew, catch a codfish and return to the finish line. T. C. Rowe was the lucky one, his time being 45 minutes. The club's commodore, A. C. Needham, was the second one to cross the line with his prize, time 57 minutes. Such a race would certainly have delightful elements of uncertainty wherever it might be tried, and would test one's skill in boat-handling as well as piscatorial adroitness, or what might be described as adeptness in local ichthyology.

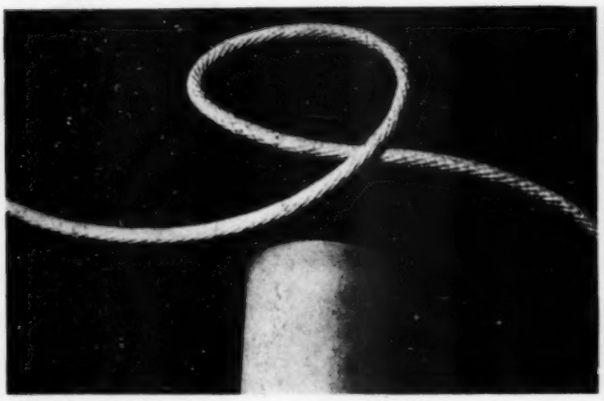


Fig. 1.—"We throw a loop over the top."

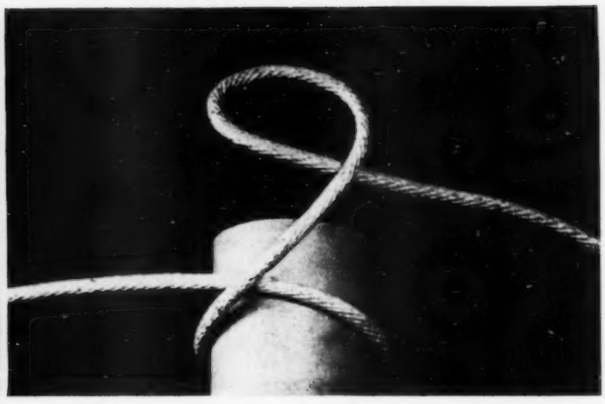


Fig. 2.—"Then throw another."

Rope and the Motor Boat.

How to Make Fast and to Tie the Various Useful Knots. Something on Cordage and How to Take Care of It.

By W. E. Partridge.

THE owner of a motor boat has little use for cordage, but he usually needs a bow and a stern line and he ought to know how to make his boat secure.

Although every man ought to know how to tie a square knot, it is not necessary to use knots in making a boat fast under any circumstances. In the boat, if it be small or an open boat, one line should be made fast to the bow. Sailors call this a "painter," why, nobody knows, except as somebody has said, "that is its name." The bow line of all boats, then, is a "painter" and is, or should be, made fast to the stem. To fasten to a stake, post, or tree, or to a ring, the sailor usually employs what he calls a "clove hitch." The advantages of this form of fastening are that, when once made, it does not come loose, it does not slip under the hardest pull, even to the breaking of the rope, and it can be readily unfastened. Even after the hardest strains it does not "jam," a sailor term which means that the parts cannot be unfastened. To make it over a post or stake when the top is free we throw a loop over the top, as in Fig. 1, then throw another one, as in Fig. 2. Or the two loops made be made at once and slipped over the post together, as in Fig. 3. They are then slipped into place, as shown in Fig. 4, and pinched together and drawn tight, as in Fig. 5.

Simple as these turns of rope seem they are as secure as any form of fastening with which we are familiar. They absolutely refuse to let go to any amount of pulling upon the free ends. The hitch when drawn tight cannot be pulled up and down on a smooth pole by weights put upon one of the ends. For this reason alone it is one of the most secure methods for holding a hammock.

Secure as the clove hitch is, it is, as we have said, unfastened with ease after the hardest and longest continued strains. To the landsman this does not appear so important as it does the sailor who is constantly handling

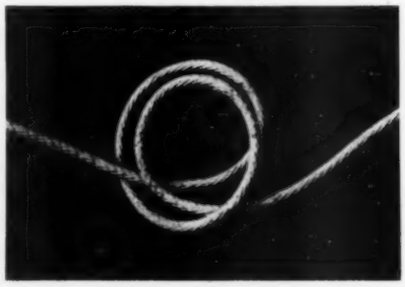


Fig. 3.—The clove hitch made up before being slipped over the post.

ropes. As a matter of fact, if a knot, or hitch or a bend cannot be readily untied it is practically useless.

When we have to fasten a rope to a ring or some object such that the rope has to be passed about it, we may still employ the clove hitch. Instead of putting loops over the end of a post we pass the ends about it so as to produce the turns. One turn of the rope rides on top of the others and confines them. The pull upon the ends increases the friction of those below, and it is upon this friction that the security depends.

A boat fastened with a clove hitch stays where she is put unless the rope breaks. And when one has learned the few simple turns necessary he does not have to pull and twist and break his finger nails in unfastening his boat while his friends stand by and smile.

After the clove hitch the bowline easily takes first place among the useful knots. In its way it is quite as important as the clove hitch and it has uses for which no other knot or hitch is suitable.

The bowline has many applications, and other names are applied to some of its uses. When the beginner has mastered the clove hitch and the bowline in all its variations he has nothing to fear from an expert's inspection of his work with ropes about his boat.

The first form of bowline to be considered is that by which one rope can be made fast to some middle point of another rope. This is shown in Fig. 6. To make this knot under these conditions the main rope is made into a loop. The end of the rope to be fastened to it is now brought up through this loop, around under the part to the left and back down through the loop alongside of "its own part," that is, by the side of itself. When drawn taut the knot is complete, and the rope will break before it will slip. In fact slipping is not possible.

The beginner will note that in making, the

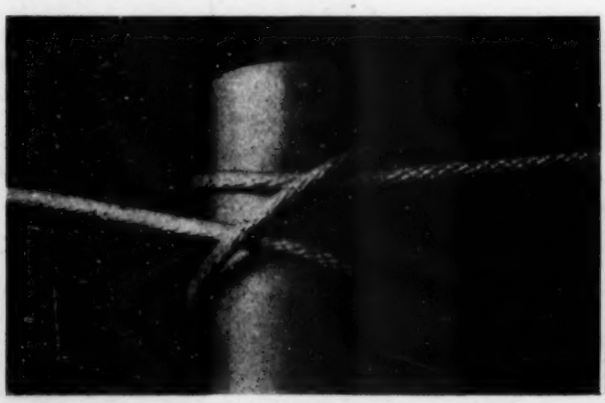


Fig. 4.—Both turns in place.

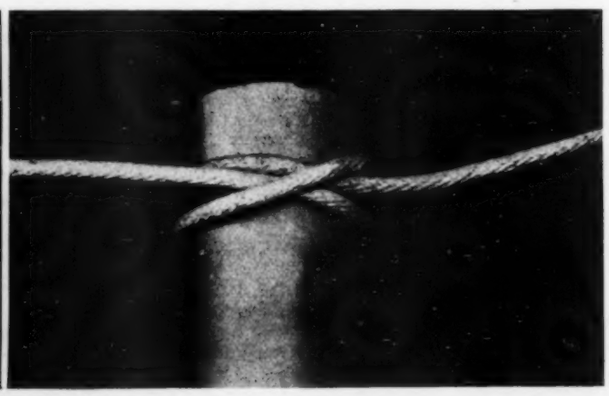


Fig. 5.—"Pinched together and drawn tight."

Fig. 6.—How the bowline is made.

end coming up through the loop goes around that part of the other rope which forms the bottom turn of the loop.

When we wish to make a slip noose for any purpose we take the end of the rope around to itself so as to make a loop of the proper size and tie it fast with a bowline, as in Fig. 7. The other end of the rope can be slipped through this to form the running noose. Such a loop, made larger, can be put under a person's arms when it becomes necessary to hoist one out of the water. Such a loop as this is used for a "boatswain's chair."

One of the cases where the inexperienced is utterly at loss to know how to proceed is when a large rope is thrown to him and he has to make a small rope fast to the larger one. He may attempt a square knot and find, to his disgust, that they pull apart as easily as though he had made no effort to unite them. For such a case he should use the knot shown in Fig. 8. He takes the end of the large rope and bends it back on itself, making as sharp a turn as possible, brings the small rope through the bend, takes a turn around the large rope with the small one and tucks the end under itself. The pull on the small rope draws the two parts of the large rope together so that the stronger the pull the more secure is the hold they have on each other. This knot has, at first sight, but small resemblance

Fig. 8.—How to fasten a small rope to a large one.

to that shown in Fig. 7, yet it is practically a bowline and possesses all its advantages.

It is frequently necessary to make a rope fast to a loop of iron, a "becket," a ring or hook. In such cases the sailor uses what he calls a "becket bend." The rope is passed through it, a turn taken about it and the end passed under the hauling part, or that which is to take the strain. Here again the turns of the rope are the same as those of the bowline, although the iron plays the part of one of the ropes. In making fast a rope to an eye spliced in the end of a rope the becket bend is best used.

Then in cases when large ropes are to be made fast to each other or when unusual strains come upon them, or when one or both of the ropes are new or very stiff, when something stronger and more secure is required. This is found in the double becket bend, illustrated in Fig. 9. The rope which comes up through the "bight" of the other (the bend) is given two turns instead of one. Or in some cases three turns are found advantageous, giving more security.

All ordinary ropes are made from vegetable fibers or wires. With wire rope the motor boatman has little to do. The vegetable fibers used in rope making are Manila, cotton and sisal, hemp and flax. There are some others that do not need particular mention because they are not particularly useful to the readers of MOTOR BOATING. The most important of these materials and the most generally used for good rope is Manila fiber. It is grown in the Philippine Islands and gets its name from Manila, the principal point of shipment. The fiber is fine, smooth, silky in feeling and very flexible. The color is a pale yellow, familiar to most people as the color of new rope. The Manila fiber is very strong and of great length, ranging from three to ten feet. Ropes made from it are soft and flexible in the hand, quite different from those made of sisal. The latter is a fiber shorter, of less strength, much coarser, stiffer, and in most ways decidedly inferior to Manila, and costing less in consequence. Ropes made of sisal are much darker, lacking the smoothness and brilliancy of the Manila.

Cotton rope is in a class by itself and is used for special purposes. Hemp and flax are also for special ropes. The quality and the price vary greatly, but the boat owner need not trouble himself about them, as the best is far too costly for him, and the cheapest is too poor to be worth attention.

We sometimes hear of a "grass rope" which is used in England and the East Indies for cordage. Samples of it have come to this country but it does not appear to be for sale as yet. Its chief advantage appears to be that it floats even when wet. It is said to be made from the outer fiber of the cocoanut. The strength is said to be less than that of Manila.

Common ropes are made by twisting the fibers together into yarns. These are combined into bundles, or strands, by twisting in the opposite direction from the first twist. Three of these larger strands are combined to make ordinary rope. The final twist given makes it what we call right-handed rope, the strands going over from left to the right. Sometimes we have four strands instead of three. Four stranded rope in the larger sizes always has a core or heart. As there are four strands instead of three the rope is somewhat smoother to handle. Under a heavy strain one strand is liable to "pull in" toward the center and cripple the rope, even though the strain be much less than what the rope should stand.

In making ropes the yarns are usually of the same size for all the common sizes of rope, large ropes containing more yarns than the smaller. As yarns of good Manila break at an average of 100 pounds each we can estimate the breaking strength of a new rope by counting the number of yarns.

There are endless variations in the details of rope making which it is not necessary to mention. The motor boatman may be contented with common three-strand rope laid right-handed.

Fig. 7.—The bowline finished.

The ordinary rope has some advantages over all other forms in the ease with which it can be spliced, knotted and repaired when damaged. Strands may be inserted, and straps or loops can be made which seem like endless pieces of new rope.

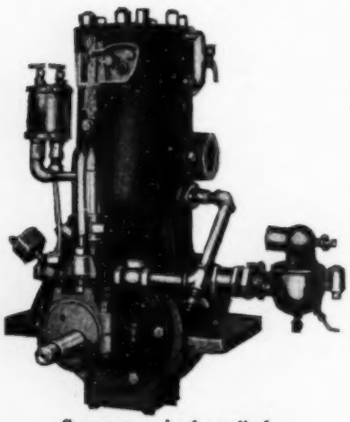
Cotton is a fine rope material but it absorbs water and becomes stiff and hard when it is made by twisting. It is used for ash hoists, where the grit destroys ordinary rope rapidly. It is a good rope for flag halyards, etc.

Braided cotton rope is thing by itself. It is made from small cotton yarns which are interwoven with each other somewhat like braiding. Sometimes the whole rope is a solid braid and is then round and smooth, much like a solid rod. It does not kink or twist, behaving much like a flexible rod rather than like a rope. It runs through pulley and blocks beautifully. There are certain kinds which are soft braided and are much less solid than the others. Some of this rope is made up with a core of straight yarns in the center neither twisted nor braided, and for tiller ropes the core is often made of copper wire. The wire core prevents the rope from changing length when wet, while the cotton cover makes it as pleasant to handle as any other rope, saving much wear and tear of varnish and woodwork.

(*Continued on page 48*).

Fig. 9.—The double becket bend. Sometimes three turns are used.

Motors for Motor Boats.



Sagamore single cylinder

Sagamore Standards and Specials.

In the motors made by the Sagamore Engine Company, of 74 Sagamore St., Lynn, Mass., a high crank case compression is used and with large ports a rapid transfer of the charge from the base to the firing chamber is secured. The exhaust port extends nearly half way around the cylinder, giving an outlet for the burnt gases of more than the usual dimensions. The results of these two features are claimed to be high power output and low consumption of fuel.

All of this make of motors are equipped with make-and-break ignition of simple design, so worked out that by the removal of four screws the whole igniter may be taken out without one's being obliged to remove the cylinder head.

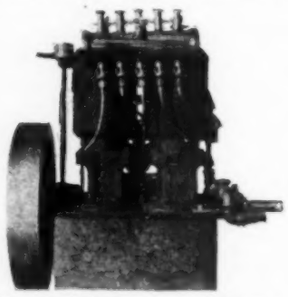
The pistons are of gray iron, fitted with turned eccentric rings and the pistons have oil grooves around them. The cylinders are of close gray iron and the heads are cast separate. The latter are water cooled, the water reaching them through outside by-passages. The company makes an extensive line of motors ranging from a 3 h.p. single cylinder to a 40 h.p. two-cylinder model. The prices range from $115 up.

The Essex.

The line of motors made by The Essex Engine Company, 416 Union St., Lynn, Mass., comprises single cylinder, two-cylinder and three-cylinder models as well as types which are fitted with separate and integral cylinder heads. The cylinders and crankcases are cast separate and the upper half of the crankshaft boxes are part of the cylinder castings. Stuffing boxes are placed on the outer ends of the bearings and the packing in these boxes holds the charge in the base while it is being compressed. The crankshafts are forged from one piece of steel and are turned to standard sizes. The pistons are of gray iron, carefully turned and fitted with four rings each. Special attention has been given to water jacketing, and the water circulation is maintained by the use of an extra large pump worked from an eccentric on the main shaft of the engine. The standard models are fitted with detachable heads and the specials, one of which is illustrated, have heads integral with the cylinders. Prices range upward from $115.

The Two Cylinder "Boston."

The motor illustrated is the product of the Marine Motor Manufacturing Company, of 5 Park Square, Boston, Mass. The crankshaft runs in bronze and Parsons' white

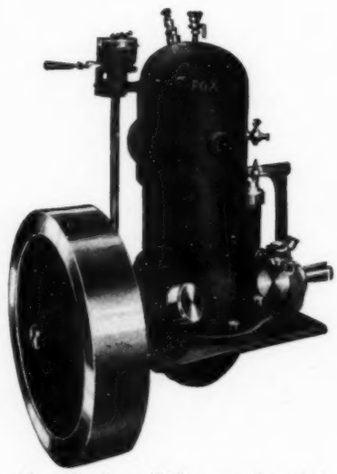


Two cylinder, 6 h. p. Boston

brass bearings. The connecting rods are of bronze and are fitted with a special device to prevent "knocking." The lubrication is effected by a gravity feed oiler and water circulation is maintained by a bronze pump of the plunger type. A small timer of late design is used and a float-feed carbureter is supplied. The price, with equipment, is $150, and the capacity, 6 h.p.

The Single Cylinder Fox.

The characteristic feature of the Fox motors is the use of long bearings both for the main journal and the connecting rod wrist and pin. The base is a single casting which is connected with the lower extension of the cylinder by means of flanges and studs. The base is fitted with a drain cock. The cylinder and cylinder head are cast integral and are amply water jacketed. The piston employed, is cast with a deflector integral and is fitted with three broad rings which are slotted, re-

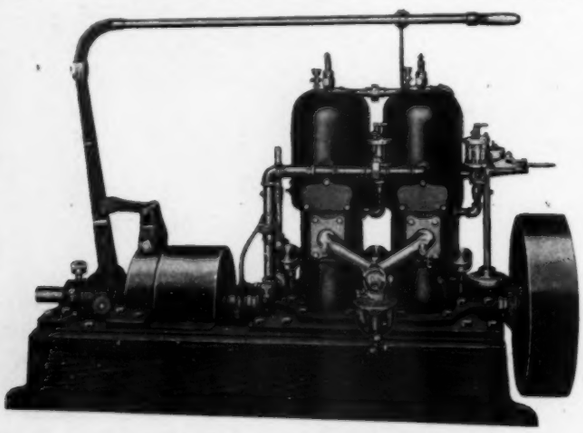


Fox single cylinder speed motor

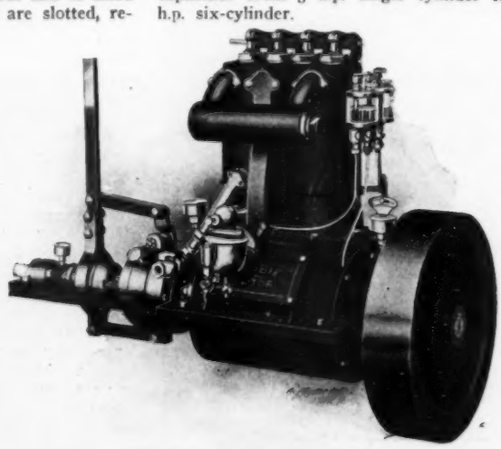
turned and ground. The pump is of the plunger type, direct acting with sea connections. The motor illustrated, which, with the others we are now considering, is the product of The Fox Reversible Gasoline Engine Company, South Cincinnati, Newport, Ky., is of what is known as the speed type and is designed to run at high speed and to be fitted to runabouts, cruisers or working boats. The horsepower ranges from 2½ to 9 in three sizes, and the prices from $72.50 to $125.

The Frisbie.

The motors of The Frisbie-Heft Motor Company, of Middletown, Conn., are built on the unit system with three sizes of cylinders, the dimensions being 4 x 4½ inches, 4¾ x 5 inches and 6 x 6 inches. The cylinders are cast in pairs as well as separately of close grain gray iron. Single and multiple motors are made up from these units. They are of the four-cycle type with the valves in the head operated by means of vertical rods and rocker arms. The crankcase is of circular section and has a longitudinal flange on either side. Make-and-break or jump spark ignition is used and on the four cylinder motors a high tension magneto or a make-and-break equipment with low tension magneto is fitted, the cost of the magneto being extra. Speed is controlled by spark advance and throttle and lubrication by the gravity system. Ring oilers are attached to the crankshaft with oil leads running to them. The prices of Frisbie motors range from $160 to $1,350 and the capacities from 3 h.p. single cylinder to 60 h.p. six-cylinder.



The 11 h. p. two cylinder Essex Special



The two cylinder Frisbie with reverse gear

New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man with a Boat. The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motor boatman needs.—In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]

Fig. 1.—U. S. Pocket Compass.

U. S. Pocket Compass (Fig. 1).—The U. S. Auto Compass Co., 411 Grand Ave., Milwaukee, Wis. In this compass, which is designed to be carred in the pocket, the body is made of highly polished brass and the aluminum dial has large agate cap letters which, it is said, can be read easily in the dark. The manufacturers claim that the compass will stand rough usage. The company also manufactures a number of other styles, including those which are so designed that they may be attached permanently to any vertical portion of the boat. The needles of these compasses float in oil. The price is $2.75 each.

* * *

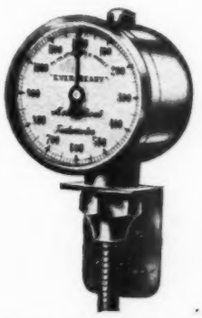


Fig. 2.—"Ever Ready" Tachometers.

"Ever Ready" Tachometers (Fig. 2).—The Auto Improvement Company, 304 Hudson St., New York City. Through the medium of a split gear connection on the propeller shaft and a length of flexible shafting running to the instrument which may be mounted at any point where it may be easily observed, this tachometer indicates constantly the number of revolutions of the propeller per minute, thus giving a running record of the motor's speed and indicating whether or not it is operating as it should. The price of the tachometer as shown is $20. The "tachometer twin" in a combination made up of the "Ever Ready" tachometer placed beside an "Ever Ready" eight-day clock with an electric light attachment between. This combination sells for $35. The clock alone sells for $10.

* * *

Fig. 3.—B & S Igniter.

B & S Igniter (Fig. 3).—Briggs & Stratton Company, Milwaukee, Wis. This igniter comprises, in a single unit, a complete high tension coil system, with the exceptions, of course, of the battery and the plugs. It is designed for rigid attachment to the engine and direct driving at camshaft speed. Within the case is arranged a jump spark coil with circuit breaker and high tension distributor. The coil and circuit breaker operating cam revolve bodily. The circuit breaker is of the type which gives a constant time of contact regardless of the engine speed, and is therefore very economical of battery, and the wires connecting with the igniter are not flexed by the act of advancing the spark. The price of the four cylinder igniter is $45.

* * *

The Visioscope.—Pinkham & Smith Company, Boston, Mass. The Visioscope is a standard prism binocular of the highest grade and it is claimed is sold for a price about half that charged for other instruments of equal quality, reliability and value. The above company is a large manufacturing optician of high standing, and is selling the Visioscope direct to the user without discounts or commissions. The instrument is neatly finished and is fitted with a substantial focusing mechanism, giving a wide range of focus and adaptability. It is not a large field glass, nor yet a small opera glass, but an instrument of moderate size and great power that can be conveniently and easily carried.

* * *

Fig. 4.—Ripley "Knocked-Down" Steel Hull.

Rippley's Knocked Down All Steel Hulls (Fig. 4).—The Ripley Steel Boat Co., Grafton, Ill. This company has placed upon the market an all steel hull for motor boats which is built complete and sold with the parts "knocked down." The parts are formed to shape, holes are punched and each part numbered so that a novice can set them up and complete the boat with woodwork to meet his own ideas. These hulls are sold complete with gasoline tank, rudder, shoe, steel keel, skeg and all steel ribs. The steel used is 18, 16, 14 or 12 gauge, galvanized. The illustration shows the hull assembled. Parts are made for boats of from 18 to 36 feet in length and they sell for from $54 to $126.

Manganese Bronze Propellers (Fig. 5).—Columbian Brass Foundry, Freeport, Long Island. This company has recently started to use manganese bronze in propellers for motor boats, believing that this metal has a number of qualities which make it ideal for the purpose. Among these qualities are a tensile strength of 65,000 pounds per square inch against 35,000 to 40,000 pounds for gun metal compositions such as are commonly used. In view of government tests tending to show that, all other parts being equal, reducing the thickness of the blades of a propeller increases the speed of the boat, the company feels that an additional benefit is derived from the use of this metal, owing to the fact that with it blades may be made thinner. Electrolysis and corrosion are said to be impossible. Many styles and sizes of propellers are offered by the company.

* * *

Fig. 5. — Manganese Bronze Propellers.

Oldberg Muffler (Fig. 6).—Oldberg Manufacturing Co., Third and Porter Sts., Detroit, Mich. The makers of this muffler claim that, because of the easy expansion stages and the manner in which the gases are handled in the several eccentrically placed chambers, it shows the minimum of back pressure possible, consistent with elimination of pressure and the sound waves caused by the entry of the exhaust at high velocity into the central muffler chamber. For these reasons it is claimed that greater power can be obtained from the engine. Prices range from $6 to $12.50, depending upon diameter and length.

* * *

Fig. 6.—Oldberg Muffler.

"Lubroleine" Motor Oils.—Fiske Brothers Refining Company, 24 State St., New York, N. Y. A line of oils, made in a number of different grades to suit every type of machinery and engine, is being made and marketed under the trade name "Lubroleine," by the above company. These oils are claimed to be made from the best bases by the best processes, so that the user is assured of most efficient and economical lubrication with a minimum carbonization.

* * *

Hand operated Klaxon (Fig. 7).—Lovell-McConnell Manufacturing Company, Newark, N. J. "The concentrated extract of noise," is the description given by its makers to the sound produced by the Klaxon. In the hand operated type the revolving multiple cam is turned by means of a pair of bevel gears providing for a very great increase in speed. Moving the handle ⅛ inch is sufficient to start the deep bass tones which readily rise in pitch as the movement is accelerated. The horn may be mounted at any convenient point, and it may be swung about on and removed entirely from its base. It is built for hard service and is finished in four coats of black rubber enamel. Price $15.

Fig. 7.—Hand Operated Klaxon

* * *

Gray Gasoline Filler Plate (Fig. 8).—The Gray Motor Company, Detroit, Mich. This gasoline filler plate is of polished brass, has a self-contained air vent and strainer. It is designed to be connected from the deck to the gasoline tank with a 1½-inch pipe, which is large enough to permit the feed of a large volume of gasoline and at the same time allow ample air vent up through the perforated disc in which the funnel is placed. Attached to the disc is a long cylindrical strainer of fine wire cloth which can be lifted from the filler pates for cleaning without unfastening. The filler plate is nicely finished, making a handsome deck fitting, and is sold at $1.50.

Fig. 8.—Gray Gasoline Filler Plate.

Fig. 9.—Camden Muffler.

Fig. 10. — "Sunbeam" Tungsten Lamp

Fig. 11.—"White" Trouble Lamp.

Fig. 12.—Goodrich Collapsible Rubber Bucket.

Fig. 13.—Safety Lock Switch.

Fig. 14.—"Michigan" Spark Coil.

Camden Muffler (Fig. 9).—Camden Anchor Rockland Machine Company, Camden, Me. In this muffler the exhaust gases pass through baffle plates placed in planes perpendicular to the longitudinal center line and having perforations so disposed that the gases are obliged to travel zig-zag in reaching the outlet. Water is admitted to the forward end of the muffler near the entrance of the exhaust and runs out on the opposite side at the outlet end. It is made in four sizes, for 1¼, 1½, 2 and 2½-inch pipe and sells for $3.50 for the first two sizes and $4.50 for the second two. It is designed to fill the demand for a strong, quiet muffler at a reasonable price.

* * *

"U-Neek" Oil and Cans.—Manhattan Oil Company, 51 Front St., New York, N. Y. This company's oil enjoys a very good reputation for its lubricating qualities and freedom from carbonization within the engine cylinders. Each case of oil contains five one-gallon cans which are rectangular in shape and flat in the direction of their height, so that they may be easily stored and carried about a boat. Each "U-Neek" can is provided with a combination filler and pouring spout, and this, together with the shape, makes it a most convenient form to use. A case of five of these cans of light, medium or heavy oil sells for $3.25, $3.60 and $3.85, respectively.

* * *

"Sunbeam" Tungsten Lamps (Fig. 10).—Western Electric Co., 463 West St., New York, N. Y. This company is distributing a bulletin illustrating and exploiting the "Sunbeam" miniature tungsten lamps for use with voltages between 1½ and 20. These lamps vary in efficiency from .9 to 1.33 watts per candle-power hour, and are intended for use in car lighting, flash or trouble lamps or in fact anywhere that it is desirable to use such a lamp and where battery or low voltage power circuit is used. The lamps can be obtained in either spherical or elongated bulbs and with any desired style of base.

* * *

"White" Trouble Lamp (Fig. 11).—Sam B. White Co., 91 Sabin St., Providence, R. I. This is an inspection lamp of exceptionally neat design. It can be used with either a six-volt storage battery or a five-cell dry battery, connections being readily made by means of the spring clips on the wire ends. The reflector focuses the lamp's rays upon the work, and a metal cap is provided for the protection of the bulb when not in use. Price, complete with 10 feet of lamp cord and terminal clips, is $1.

* * *

Goodrich Collapsible Rubber Bucket (Fig. 12).—B. F. Goodrich Co., Akron, Ohio. This folding bucket is intended for use in refilling the tanks, etc., or in cases where it is necessary to carry water while on cruise. It is a thoroughly practical article, is very well made, and is at times a very convenient thing for the motor boatman to have along. It is fitted with a gravel screen at pouring outlet and folds up so compactly that it can be stowed almost anywhere about a boat. Caution is given against the use of the bucket for carrying gasoline, since it rapidly destroys rubber.

* * *

Safety Lock Switch (Fig. 13).—Safety Device Company, Indianapolis, Ind. This new lock-switch is built for the maximum of strength and durability, and it is given an attractive finish in polished brass and verdigris. It will operate with any system of ignition, the switch bar being thrown from one set of batteries to the other, or from batteries to magneto at will. For convenience sake the switch bar can be operated by the foot if desired. For magneto systems with self-starting feature, a self-starting button is provided. This feature has been designed more especially for boats with Remy magneto.

* * *

"Michigan" Spark Coils (Fig. 14).—American Electric Fuse Co., 110-116 Nassau St., New York, N. Y. Besides having the windings arranged for the greatest efficiency of operation and possessing the highest of insulation, these coils possess the feature of quick demountability for all the parts. This is well shown in the cut herewith, in which the extremely rapid vibrator, together with the coil core, the primary and secondary windings and the condenser are each withdrawn from the containing case.

"Minogue" Double Spark Plug (Fig. 15).—M. F. D. Motor Parts Company, 1314 Arch St., Philadelphia, Pa. This is a readily demountable plug, in which the body part is screwed permanently into the cylinder or valve cap, the porcelain, which, by the way, carries both of the sparking points and terminals, being retained in the body by a clamping yoke and winged screw. The porcelain is so readily demountable that the socket of the body may be used as a priming cup with as much convenience as the ordinary cock-cup. Price $1.50 each, or four plugs with two extra porcelains for $5.

* * *

The Ideal Swith (Fig. 16).—The Ideal Switch Company, Plainville, Conn. This company manufactures an extensive line of ignition switches, of which a representative example is illustrated herewith. A feature peculiar to all of them is the spring contact post which is said to be self-locking and to give a positive clean contact which cannot be jarred out of position. The lever is made removable so that the switch may be used as a lock, the common contact point being so placed that it cannot be reached except with a special lever. It is made in a style in which all of the contacts are enclosed and in side acting styles as well. The type illustrated sells for $1.25.

* * *

The Hi-Fre-Co. Spark Plug (Fig. 17).—High Frequency Coil Company, Los Angeles, Cal. The form and character of the insulating member or core are pointed out as the chief feature of this plug. The high tension conducting member is surrounded by an air space in addition to the insulating material, thus producing a plug for which is claimed the lowest possible inductive capacity, which prevents the loss of high tension current which would otherwise take place. A vitrified composition known as selite is used for the insulation and it is claimed to have greater mechanical strength than porcelain and to be affected to a lesser degree by sudden changes in temperature. As shown, the plug sells for $1.50 each.

* * *

G-L Economizer (Fig. 18).—Gillett-Lehman Economizer Company, 1777 Broadway, New York City. Certain improvements have been made lately in this device which is designed for attachment to any make of carbureter for providing an outside connection between the intake pipe and float chamber, and maintaining a proper relationship between the pressures therein. Additional gauge marks have been put on to facilitate adjustment, and the device is now made up with American standard threads as well as foreign. The price of the attachment is $10, and it is claimed to give increased power as well as greater economy of operation.

* * *

"Albright" Spark Plug (Fig. 19).—Dunn Machinery Company, 54 Marietta St., Atlanta, Ga. Only imported mica is used in the insulations of these plugs. As will be seen from the cut, the insulated core is retained in the body by a heavy bushing, and the lower end of the body is bored out to form a chamber into which the gas is compressed. The extreme lower end is internally threaded and the spark is caused to jump between the peaks of these threads and similar peaks formed on the head of the central electrode, thereby presenting a number of points from which the spark can jump. Prices are $1.50 each; in lots of 1 doz., $1.25 each and in gross lots, $1 each.

* * *

Stryker Muffler Cut-Out (Fig. 20).—C. W. Stryker, 314 East Onondaga St., Syracuse, N. Y. This muffler cut-out is designed for ready attachment to the exhaust pipe at any point forward of the muffler and for the introduction of a passage which shall be absolutely free and unobstructed when the valve is open. To this end, the body is made in halves and is clamped upon the pipe or tube by two bolts, and the valve is given the form of a butterfly. The valve is held closed by a spring. Prices for the cut-out complete, to fit the several sizes of pipe and tubing, range from $4.50 to $5.50.

Fig. 15. — "Minogue" Double Spark Plug.

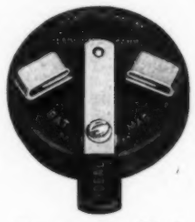


Fig. 16.—The Ideal Switch.

Fig. 17.—The Hi-Fre-Co. Spark Plug

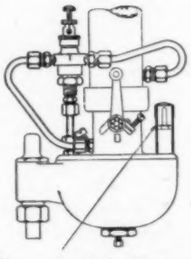
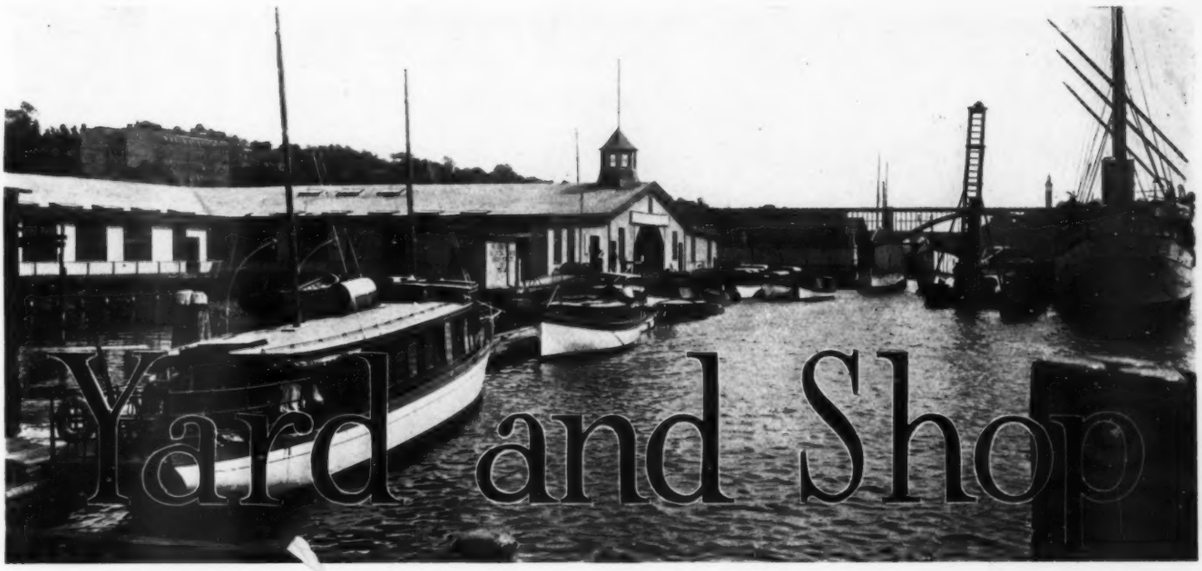


Fig. 18.—G-L Economizer.

Fig. 19. — "Albright" Spark Plug.

Fig. 20.—Stryker Muffler Cut-out.



Michigan Wheel Company. Grand Rapids, Mich., have discontinued their eastern branch, which was located at 107 Liberty St., New York City. In future their goods will be handled by the Motor Boat Supply Company, of the same address in Liberty St.

Model 215—30 ft. 10 in. long, 18 h. p., of the Minnesota Boat & Power Co.

Welin and Lane & DeGroot Consolidation.—The Welin Quadrant Davit Company and the Lane & De Groot Company have joined forces, composing the firm of Welin Davit and Lane & De Groot Company, Consolidated. The manufacture of Welin quadrant davits, Lane & De Groot lifeboats, the A-B-C life-preservers, and other marine specialties, will be carried on in the old Lane & De Groot factory, 305-315 Vernon Ave., Long Island City, N. Y. The general offices of the company will be on the 17th floor of the Whitehall Building, New York City. The consolidated company is capitalized at $150,000, and the officers are: President and general manager, A. P. Lundin; vice-president, Ernest S. Suffern; secretary and treasurer, Jno. C. Silva. These officers, together with Jno. McMullen and Wm. Stevenson, constitute the board of directors.

The Jencick Motor Manufacturing Company, Port Chester, N. Y., wishes us to correct an error in the story of the Gold Cup Races in our September issue, where Duquesne's Jencick engine is described as an eight-cylinder, 200 h.p. motor. In reality it is a six-cylinder machine, rated at 175 h.p.

Williams & Wilson, Montreal, Que.—This well known machinery house in Montreal has added a gasoline marine engine department, and taken the agency for Ferro marine engines. They will act as Ferro distributors for the entire province of Quebec.

Ferro Engine in Ferry Service.—The U. S. Reclamation Service has found use for a small gasoline launch in the work on The Salt River project at Roosevelt, Arizona. The distance across the Tonto Reservoir is one-third of a mile and a large ferry, 36 feet by 9 feet, is used for transporting workmen, horses and materials. The motive power for this ferry is a 20-foot launch in which a 7 h.p. Ferro engine is installed. This boat is lashed to the side of the ferry, and in the past 8 months the launch and ferry have made some 4,600 round trips of two-thirds of a mile each. This means that a total distance of over 3,000 miles has been covered. The load carried is said to have been sometimes as much as 12,000 pounds.

American Exposition in Berlin.—Max Vieweger, 50 Church St., New York, the American manager of the exposition of American machinery and manufactures to be held in Berlin in April, May and June, 1910, has announced that the Hamburg-American and North-German Lloyd lines have made a special reduction of 30 per cent. in their freight rates for the exposition. A special sales office and Bureau of Information will be established to unpack, install and demonstrate exhibits for those who are unable to send a man of their own to Berlin. A moderate charge will be made for this service, but aside from this the exposition will be unique in that there are no extras, all incidentals being included in the space rental, which is $4 per square foot. Mr. John M. Carson, Chief of the Bureau of Manufactures of the United States Department of Commerce and Labor, will be glad to cooperate with the American committee in giving information to manufacturers who intend to exhibit.

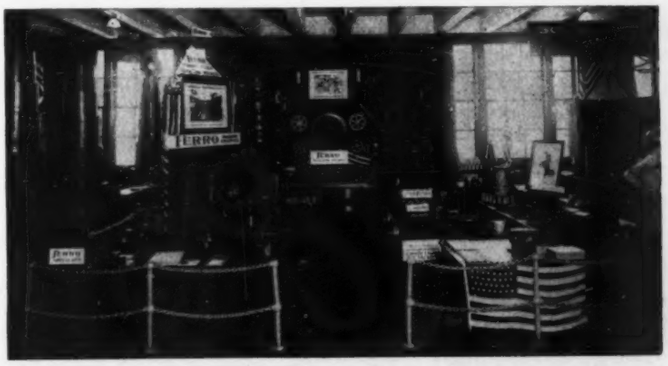
The Month's Record of Sales and Charters.

CHASE—Motor boat, sold by Michigan Boat Works to S. Davis, New York.—(Tams, Lemoine & Crane.)

DELILAH—60-foot motor yacht, two 20 H.P. engines, chartered by W. Harold Powers, Red Bank, N. J., to Dr. A. R. Ledoux, Cornwall-on-Hudson.—(William P. Kiggins.)

HORTENSIA—36-foot hunting cabin, 24 H.P., sold by Charles Forman, New Brunswick, N. J., to Jos. R. Stulb, Philadelphia, Pa.—(William P. Kiggins.)

THERE-SHE-GOES—70-foot motor yacht, sold by Julius Fleischmann, New York City, to Archer M. Huntington.—(Tams, Lemoine & Crane.)



The exhibit of the Seattle Marine Supply Co. at the Alaska-Yukon-Pacific Exposition

Motor Boat Patents.

ISSUED AUGUST 10, 1909.

930,334. **Tank for Gasolene, etc.** Albert A. Augustus, Cleveland, Ohio. Filed Nov. 22, 1907.

930,345. **Sparking Mechanism for Gas Engines.** Ernest S. Bowen, Geneva, N. Y., assignor of one-half to Walter Lester Fay, Geneva, N. Y. Filed Feb. 4, 1907.

930,347. **Explosion-Engine.** Charles T. Brown, Chicago, Ill. Filed March 4, 1907.

930,351. **Spark-Plug.** Alexander Clarke, Folsom, W. Va., assignor to South Penn Oil Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed May 29, 1908.

930,359. **Mechanism for Propelling Ships and Other Water-Vehicles.** Ludwig Diehl, Zweibrücken, Germany. Filed July 21, 1908.

930,372. **Internal-Combustion Engine.** Gustavus Green, Bexhill, England, assignor of one-fourth to Francis Pelham Clinton Hope, and one-fourth to Joseph Miller, Bexhill, county of Sussex, England. Filed Sept. 15, 1905.

930,409. **Propeller for Vessels.** Otto Nielsen, Antwerp, Belgium, assignor of three-twelfths to S. R. Upham and two-twelfths to E. L. Kearns, Pittsburg, Pa. Filed April 21, 1908.

930,443. **Carbureter.** Frank L. Vaughan and James R. McKenzie, Rochester, N. Y. Filed Dec. 14, 1908.

930,462. **Lubricator.** George B. Essex, Detroit, Mich. Filed Oct. 19, 1908.

930,472. **Valve-Grinder.** Frank I. Harding, Cleveland, Ohio. Filed May 6, 1909.

930,474. **Current-Testing Device for Electric Batteries.** William C. Hood, Chicago, Ill., assignor of one-half to Charles W. Dietrich, Chicago, Ill. Filed March 20, 1908.

930,483. **Carbureter and Like Device for Mixing Gas or Vapor and Air.** Percy B. W. Kershaw, London, England, assignor to Owen David Lucas, London, England. Filed April 6, 1906.

930,495. **Shaft-Coupling.** Charles Schmidt, Cleveland, Ohio, assignor to The Peerless Motor Car Company, Cleveland, Ohio, a Corporation of West Virginia. Filed March 27, 1907.

930,574. **Acetylene-Burner.** Kuno Thurnauer, Nuremberg, Germany. Filed Jan. 3, 1905.

930,596. **Carbureter Jacket or Casing.** Marshall W. Hanks, Madison, Wis. Filed Jan. 9, 1906.

930,600. **Double-Thrust Ball-Bearing.** Albert Hirth, Cannstatt, Germany, assignor to Ernst Gustav Hoffmann, New Rochelle, N. Y.; Alfred W. Kiddier and Amalie Mathilde Baumann, executors of said Ernst Gustav Hoffmann, deceased. Filed Oct. 13, 1906.

930,605. **Transmission-Dynamometer.** Thomas R. Moore, Walden, N. Y. Filed April 4, 1908.

930,620. **Combined Breast-Drill and Valve-Grinder.** John R. Sandberg, Denver, Colo. Filed Aug. 21, 1908.

930,724. **Carbureter.** Harry H. Boore, Los Angeles, Cal. Filed June 17, 1908.

930,727. **Storage Battery.** Rufus N. Chamberlain, Depew, N. Y., assignor to Gould Storage Battery Company, New York, N. Y. Filed April 5, 1905.

930,728. **Storage Battery.** Rufus N. Chamberlain and Herbert E. Pratt, Depew, N. Y., and Albert S. Hubbard, Belleville, N. J., assignors to Gould Storage Battery Company, New York, N. Y. Filed Dec. 17, 1906.

930,788. **Extension Plug or Device for Connecting Electric Conductors.** William E. O'Neil, Norwich, N. Y. Filed March 27, 1909.

930,855. **Indicator for Spark-Plugs.** Alfred C. Hall, Sebastopol, Cal. Filed Sept. 25, 1908.

930,943. **Internal-Combustion Engine.** Herbert H. Dow, Midland, Mich., assignor to The Westinghouse Machine Company, a Corporation of Pennsylvania. Filed Aug. 23, 1906.

931,009. **Pneumatic Life-Jacket.** Peter B. Gaudet, Chelsea, Mass., assignor to Jeremiah M. Pinau, Boston, Mass. Filed April 3, 1909.

ISSUED AUGUST 17, 1909.

931,065. **Electrical Interrupter for Explosive-Engines.** Gottlieb Honold, Stuttgart, Germany. Filed Dec. 18, 1905.

931,066. **Electromagnetic Igniter for Explosion-Engines.** Gottlieb Honold, Stuttgart, Germany. Filed Aug. 7, 1906.

931,122. **Releasing Device.** Charles Hunt, New York, N. Y., assignor of one-fourth to Jason Rogers, Essex Fells, N. J. Filed Aug. 5, 1908.

93,150. **Drop-Propellor for Boats.** Franklin E. Stribling, Matagorda, Tex. Filed July 3, 1908.

931,176. **Explosive-Engine.** William F. Beaton, Frankford, Pa. Filed Sept. 2, 1904.

931,177. **Boat.** William N. Bell, Pittsburg, Pa. Filed Dec. 23, 1908.

931,319. **Gas-Engine.** Alvaro S. Krotz, Chicago, Ill. Filed Feb. 28, 1907.

931,346. **Internal-Combustion Engine.** Erik A. Rundlöf, Stocksund, Sweden. Filed Aug. 28, 1908.

931,359. **Attachment for Compasses.** Albert F. Washburn, Bastrop, La. Filed Oct. 26, 1907, Serial No. 399,319. Renewed June 17, 1909.

931,386. **Carbureter.** Monroe D. Colbath, Hampden, Me. Filed July 31, 1908.

931,389. **Internal-Combustion Engine.** George L. Crook, Indianapolis, Ind., assignor to Atlas Engine Works, trustee, Indianapolis, Ind., a Corporation of Indiana. Filed Sept. 24, 1908.

931,445. **Electromagnet-Coil Construction.** Abbot A. Low, Horseshoe, N. Y., assignor to Abbot A. Low, Horseshoe, N. Y., Maurice J. Wohl, New York, N. Y., and Harry Hertzberg, Brooklyn, N. Y., trustees. Filed Dec. 12, 1908.

931,500. **Clutch.** John Schneider, Ann Arbor, Mich. Filed March 18, 1909.

931,501. **Reversing Apparatus.** George Schulz, New York, N. Y. Filed June 8, 1908.

931,633. **Bilge-Drainer.** Charles W. Moore, New Orleans, La. Filed Nov. 20, 1906.

931,659. **Grease-Cup.** Arthur F. Taylor, Halifax, Nova Scotia, Canada, assignor, by mesne assignments, to Robie S. Davison, Halifax, Nova Scotia, Canada. Filed Nov. 30, 1906. Renewed Nov. 14, 1908.

Trade Mark Ser. No. 42,046. Emil Grossman Company, New York, N. Y. Filed April 27, 1909. Consists of an annular red band on the neck of the spark-plug. Particular description of goods.—Spark-Plugs.

Trade Mark Ser. No. 42,827. Columbian Brass Foundry, Freeport, N. Y. Filed June 4, 1909. Particular description of goods.—Propellers.

ISSUED AUGUST 24, 1909.

931,726. **Match-Starter for Explosive-Engines.** William W. Bonson, Dubuque, Iowa, and Harley L. Clarke, Chicago, Ill. Filed Aug. 18, 1908.

931,754. **Fastening Device.** George S. Greenleaf, Chicago, Ill. Filed March 16, 1908.

931,783. **Reciprocating Propeller.** Bennett D. Marks, Chicago, Ill. Filed Sept. 3, 1908.

931,837. **Internal-Combustion Engine.** Harry W. Beach, Montrose, Pa. Filed March 22, 1905.

931,976. **Internal-Combustion Engine.** Estey M. Turner, Pasadena, Cal. Filed Aug. 10, 1908.

932,079. **Leak-Detector.** Joseph B. Williams, Coraopolis, Pa. Filed July 27, 1908.

932,184. **Internal-Combustion Engine.** Charles H. Sergeant, New York, N. Y. Filed Oct. 13, 1908.

932,184. **Electrical Ignition for Internal-Combustion Engines.** Victor Barreto, Marlow, England. Filed May 11, 1908.

932,321. **Rotary Internal-Combustion Engine.** Albin P. Plates, London, England, assignor to Plates Richards Rotary Engine Limited, London England. Filed March 11, 1909.

932,332. **Igniter.** George W. Sage, Eureka, Cal. Filed Oct. 6, 1908.

932,338. **Spark-Plug.** William M. Sleaford, Brighton, Mich. Filed Nov. 16, 1907.

932,360. **Carbureter.** Frank J. Watt, New York, N. Y.

ISSUED AUGUST 31, 1909.

932,435. **Liquid Gear for Propellers.** George A. Boyden, Mount Washington, Md. Filed Sept. 6, 1906.

932,463. **Rotary Internal-Combustion Engine.** Frederick W. Goyette, Los Angeles, Cal., assignor of one-third to Harry Erwin and one-third to Armedas Vincent, Los Angeles, Cal. Filed July 26, 1907.

932,465. **Carbureter.** Cyrus A. Haas, St. Louis, Mo., assignor of one-half to Imperial Brass Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 30, 1908.

932,719. **Ship-Repair Apparatus.** James H. Reinhardt, East Orange, N. J. Filed June 28, 1906.

932,720. **Means for Buoying Ships or Closing Holes Therein.** James H. Reinhardt, East Orange, N. J. Filed Oct. 1, 1906.

932,723. **Muffler for Explosive Engines.** Dewane B. Smith, Deerfield, N. Y. Filed July 27, 1907.

932,733. **Construction of Hulls for Vessels.** Charles Weyher, Paris, France. Filed May 7, 1908.

932,735. **Starting Device for Automobile and Other Engines.** Arthur G. Willard, Bakersfield, Cal. Filed July 13, 1906.

932,804. **Controller for Gas-Engines.** Clarence L. McHenry, Lansing, Mich. Filed Jan. 18, 1908.

932,825. **Indicator.** Charles W. Snyder, Hudson, N. Y. Filed March 17, 1909.

932,841. **Battery-Covering.** George E. Andrews, Providence, R. I. Filed May 21, 1909.

932,855. **Manufacture of Lubricating Compounds.** John E. Gill, Franklin, Pa. Filed Oct. 19, 1905.

932,890. **Carbureter for Internal-Combustion Engines.** Philippe J. Grouvelle and Emile H. Arquembourg, Paris, France. Filed June 7, 1906.

932,918. **Hydrocarbon-Engine.** Ernst Troike, Sandusky, Ohio, assignor of one-fourth to Paul Troike, Sandusky, Ohio. Filed Nov. 30, 1908.

933,013. **Propeller.** Joseph F. Ball, San Francisco, Cal., assignor of one-fourth to Charles C. Bills, one-fourth to P. D. Cutler, and one-fourth to Frederick W. Ball, San Francisco, Cal. Filed April 27, 1900.

ISSUED SEPTEMBER 7, 1909.

933,100. **Gas-Engine.** Frederick W. Reeves, Pittsburg, Pa. Filed Feb. 29, 1908.

933,115. **Combination Spark Gap and Plug.** Arthur L. Ryder, Pasadena, Cal. Filed May 15, 1907.

933,130. **Antifriction Alloy.** Enrique A. Touceda, Albany, N. Y. Filed Jan. 11, 1909.

933,151. **Propeller.** Theodore Amnelius, South Framingham, Mass. Filed April 6, 1909.

933,246. **Ignition Device for Gas-Engines.** Albert J. Gifford, James J. Burns and Benjamin S. T. Bishop, Worcester, Mass., assignors to W. H. Leland & Co., Worcester, Mass., a Copartnership. Filed Nov. 6, 1908.

933,325. **Fuel-Feeder for Internal-Combustion Engines.** Norman McCarty, Indianapolis, Ind., assignor to Atlas Engine Works, Indianapolis, Ind., a Corporation of Indiana. Filed Feb. 9, 1909.

933,331. **Ship-Table.** James W. Slade and Benjamin F. Downs, Richburg, Miss. Filed Dec. 8, 1908.

933,333. **Internal-Combustion Turbine.** Moffat St. Clair, Thorndale, Ontario, Canada. Filed Feb. 15, 1909.

933,400. **Stuffing-Box.** George Strance, Reece S. Bull, and William P. Norris, Sistersville, W. Va. Filed Jan. 28, 1908.

933,426. **Boat.** Cyrus S. Frost, Central Lake, Mich. Filed Dec. 10, 1908.

933,444. **Paint-Can.** Robert Henke, Jr., New York, N. Y. Filed May 19, 1909.

933,484. **Widow's-Cruse Tank Device.** Paul W. Morris, Bridgeport, Conn. Filed Aug. 31, 1908.

933,614. **Headlight.** Charles L. Betts, New York, N. Y., assignor to R. E. Dietz Company, New York, N. Y. Filed April 23, 1908.

933,709. **Mixing Attachment for Internal-Combustion Engines.** John Illy, Jamestown, N. Y. Original application filed May 10, 1907. Divided and this application filed Nov. 11, 1907.

Rope and the Motor Boat.

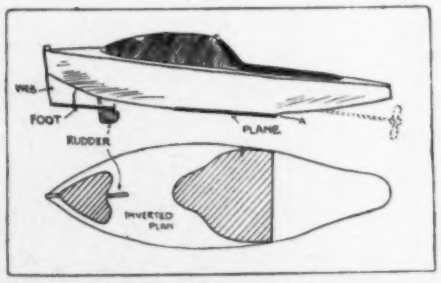
(*Continued from page 43*).

Braided rope has disadvantages which render it an object of hatred to the sailor. It cannot be spliced. The ends can only be secured from fraying by a whipping, a knot does not seem possible. An eye can only be made by seizing, or some kind of a casting. Finally it is so stiff and smooth that a knot, when tied in it, is not very secure. Some one may learn how to handle it one of these days, but until that time comes the sailor will use something else when he can.

The motor boat may have halyards for her flags and that will comprise her "running rigging." Then she should have a bow and a stern line. The bowline, usually made fast forward, the sailor calls a "painter." Why, nobody knows, except that "that's its name." A farmer would call a bow line a halter. In going ashore, or making a landing, the boy brought up "along shore" is always sure to have hold of the painter. His boat may get away from him. It is a good rule to follow. Painter and stern line should be in proportion to the size of the boat. An anchor rope is also needed. Its size depends on the size of the boat and its length upon the kind of water in which the boat is used. It should be shorter in still shoal water, like rivers and shoal ponds, than in the sea.

Rope is always sold by the pound and when you go and ask for ten fathoms of line it is not necessary to say, "give me good measure." You will get your ten fathoms sure and some over.

The size of rope is measured by the diameter in the merchant marine and by the circumference as well. You have to guess at which method is intended. This is fairly easy, because one is three times as large as the other. Circumference is most accurate for the inexperienced, the diameter the best for the expert.



Tadpole.—A British skimming boat.

An approximate sketch of the latest product of Sir John Thornycroft, which is described on page 27. The positions of the web, foot, rudder and plane and their approximate shapes are indicated.

Lake Hopatcong.

(*Continued from page 11*).

1h. 15m. 23⅗s., and Peter Pan's 1h. 15m. 27⅘s.

Barbara's best lap of six miles on this occasion was done in 14m. 57⅖s. She had previously done the lap in 14m. flat, a speed of over 25.7 miles per hour. Barbara II, now holder of the speed championship flag, is 29 feet long, 4 feet beam, was built by the Detroit Boat Company, and has a 40 h.p. American and British motor. Peter Pan II was designed and built by the Reliance Motor Boat Company, N. Y., is 28 feet in length with 4 feet 2 inches beam, and is drawn by a 30 h.p. Mercury motor. She is not only a racer but a comfortable family runabout, capable of carrying eight passengers.

Commodore Bird has a new boat, Barbara III, which is now flagship of the club. She, like Peter Pan II, is a Reliance product, and a beautiful piece of workmanship in Spanish cedar, 35 feet in length, with a 60 h.p. Mercury engine, turning a propeller 20 in. diameter by 30 in. pitch. She is expected to do 27 miles per hour when thoroughly tuned up.

The Lake Hopatcong Yacht Club has had a most successful season and is looking forward to an even better one next year. The club will build a large new house on Bertrand's Island, where it recently purchased a fine piece of property with a water front of 222 feet.

Points and Opinions on Exhaust Outlets.

(*Continued from page 22*).

inclined upwards and downwards and increases the size of the cavity in the water, the main part of the exhaust escaping through the enlarged opening. In backing up, the water will enter the exhaust head in three streams, going in different directions, causing eddies and preventing the water from being forced up into the exhaust pipe.

To produce an efficient exhaust head, the following points should be observed:

First: That part of the exhaust gas (about ⅓) consisting of superheated steam, should be condensed in the pipe and expansion chamber.

Second: To offer as little resistance as possible to passing through the water, the exhaust head should be as small as possible, consistant with efficiency, and wedge shaped.

Third: The exhaust head, passing through the water, will create a greater suction in the exhaust line than can possibly be obtained by a small opening admitting water into the exhaust gas at the outlet.

Fourth: The larger the cavity formed in the water, for the size of the head used, the greater will be the efficiency of the device.

Fifth: An expansion chamber should be used. The greater the speed of the boat the smaller the size of the expansion chamber, owing to the fact that the cavity in the water will be larger at high speed than at slow.

Sixth: The chamber should be arranged so that the bottom will be at least level with the waterline.

Seventh: The outlet from the expansion chamber should be at the lowest point to allow the water to drain off.

Eighth: Some means should be used to prevent the water from being forced into the pipe line when backing up.

Ninth: As the outlet head is under water, any steam forming in the pipe line will be trapped and will rise to the highest point in the system, and should the engine stop with the exhaust port uncovered the steam will rise and condense in the cylinder, leaving the sparking points short circuited by water forming between the points. To prevent this condition an air valve should be placed in the system at some point higher than the waterline and should be opened as soon as the motor is stopped to allow the steam to escape.

National Motor Boat Carnival.

(*Continued from page 7*).

most vital branch of the sport to grow stronger than it otherwise could have become, had all the interest been centered in the purely and somewhat useless high-speed boat which is not of really great importance to the great number of motor boating men.

Long Distance Race to Poughkeepsie and Return, for Racing Boats—115 nautical miles. Start, 9.40 A. M.

Boat and Owner.	Finish. H.M.S.	Elapsed Time. H.M.S.	Cor. Time. H.M.S.
Den, J. H. Hoadley	3.43.14	6.03.14	5.46.49
Gunfire II, W. J. Brainard	3.34.20	5.54.20	5.54.20
Rochester, W. J. Graham	4.54.25	7.04.25	5.53.14
Artful, Harry Coons	Disabled		
The Senator, August Nelson	Disqualified		
Comet, Fred Ratzmeyer	Disqualified		
Whim, R. E. Vanderhoff	Disqualified		

Long Distance Race to Peekskill and Return, for Cruising Boats, 40 Feet and under—60 nautical miles. Start, 9.45 A. M.

Boat and Owner.	Finish. H.M.S.	Elapsed Time. H.M.S.	Cor. Time. H.M.S.
Irene II, S. W. Granberry	4.18.56	6.33.56	4.56.45
Elmo II, F. D. Giles, Jr.	4.49.26	7.04.26	5.12.07
Barbara, W. M. Duncan	4.49.45	7.04.45	5.22.31
Minerva, A. F. Barkelew	4.56.41	7.11.41	6.00.17
Jolly Roger, F. W. Horenburger	5.02.56	7.17.56	6.00.03
Mayflower, G. F. Schiffmacher	5.06.20	7.21.20	6.01.19
Ida F. II, F. D. Archibald	4.38.22	6.53.22	6.30.02
Dell, James H. Cassidy	5.08.33	7.23.33	7.23.33
XL, Walter Southard	Disqualified		

The Dell started 15m. behind the gun. The Diana, the Juliette, the Kid II, the Reta and the Twin Kid also started.

Same Race, for Cruising Boats, 40 Feet and over—Start, 9.45 A.M.

Ilys, J. G. N. Whitaker	3.57.57	6.12.57	4.39.47
Avis, F. C. Havens	2.40.15	4.55.15	4.55.15
Alabama, J. H. Hoadley	3.06.00	5.21.00	5.03.37
Wanderlust, E. J. Steiner	3.23.31	5.38.31	5.07.24
Irma, F. G. Carson	4.56.22	7.11.22	Not m'd
Sawma, A. T. S. Clark	Disabled		

Talks With Our Naval Architects.

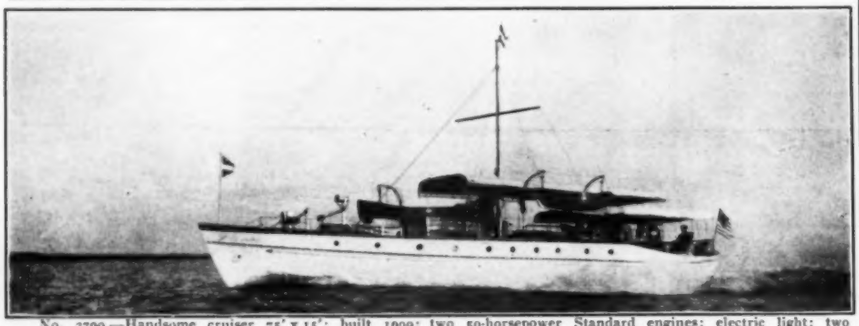
(*Continued from page 33*).

"The cost per horsepower with an internal combustion engine using gasoline is much greater than the cost per horsepower of a steam engine, but in view of the fact that the space required for the machinery of a motor boat is so very much smaller than that of a steam plant, the same amount of living accommodation can be obtained in a very much smaller vessel, so that for a given amount of living space a very much smaller boat is required and in consequence the horsepower necessary to develop the same speed in the smaller boat is very much less, thus reducing the fuel account very materially. Furthermore, the smaller boat requires a smaller crew in the deck department, as well as in the engine department, thus making a considerable reduction in the payroll. Another great advantage in favor of the internal combustion engine is the fact that the boat is in condition to start off at a moment's notice, whereas in the steam yacht something like an hour's time is required to get up steam before a start can be made. This saves the cost of the fuel required to get steam and at the end of the run when the motor is stopped the consumption is stopped also, while in the steam plant the fire on the grate of the boiler goes to waste. The absolute evenness and efficiency of the mechanical feed of gasoline fuel is in sharp contrast to the variation in steaming ability of a boiler installation, as the firemen become exhausted toward the end of a day's run. These causes have led to motor boats superseding and replacing the steam yachts of about 100 feet waterline and under.

"Whether the motor boat with its internal combustion engine will gradually supersede steam yachts of large dimensions is problematic, as up to the present time the largest single units of marine internal combustion engines have not attained more than 500 h.p., and methods will have to be devised for cooling the pistons and overcoming other difficulties before larger units can be operated successfully. Taking then into consideration that large ocean-going steam yachts have anywhere from 2,000 to 5,000 indicated horsepower, it would require from four to ten internal combustion motors for these vessels, the installation of which would be very difficult.

"From present indications, it is believed that in cruising motor boats having more than 200 h.p., producer gas will take the place of gasoline. The largest marine installation of this kind at the present time is in the magnetic survey yacht, Carnegie, where an auxiliary plant of 125 h.p. has been installed and has proved to be a success in every respect. The results obtained are so satisfactory that a motor boat is being designed for 1910 which will be fitted with a plant of this type to develop 500 h.p.

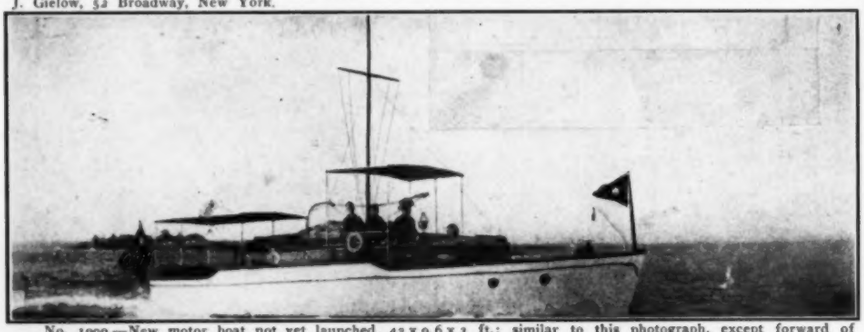
"It is too soon to attempt to predict what will be the ultimate possibilities of this type, but there is every reason to believe that vessels will be built in which installations of 2,000 h.p. will be operated successfully."



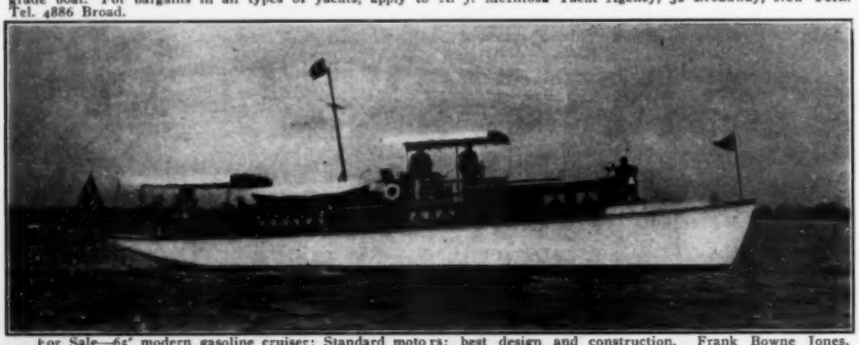
No. 2799.—Handsome cruiser 75' x 15'; built 1909; two 50-horsepower Standard engines; electric light; two tenders; engine room forward; galley next aft; saloon amidship; two staterooms aft; sleeps eight in cabin. Owner building larger boat. Price reasonable. Full particulars, Whittelsey & Whittelsey, 11 Broadway, New York City. 'Phone 4718 Rector.

No. 2584.—Desirable raised deck cruiser 65' x 14'; built 1909; Standard engine; electric lights; two staterooms; sleeps seven; large galley. Ideal boat for extensive cruising. For sale or charter for winter. Owner building larger boat. Whittelsey & Whittelsey, 11 Broadway, New York City. 'Phone 4718 Rector

No. 1663.—FOR SALE.—Attractive, modern and roomy twin screw power yacht; 65 x 13 x 3.4 ft. draft. Designed and built by well-known firms. Equipped with two 18 H.P. Standard engines; speed, 11 knots. Large fuel and water capacity. Interior finished in mahogany, white, etc. Double stateroom, dining room, main saloon, two toilets. Electric lights, two boats, fully furnished with best. Must be seen to be appreciated. Apply to Henry J. Gielow, 52 Broadway, New York.



No. 1000.—New motor boat not yet launched, 42 x 9.6 x 3 ft.; similar to this photograph, except forward of bridge is raised deck type; 18 H.P. motor, or purchaser may select any motor preferred. Price is bargain for high-grade boat. For bargains in all types of yachts, apply to A. J. McIntosh Yacht Agency, 32 Broadway, New York. Tel. 4886 Broad.



For Sale—65' modern gasoline cruiser; Standard motors; best design and construction. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York. Steam and gasoline yachts of all sizes for sale or charter.

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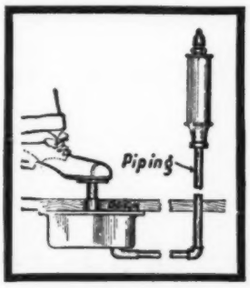

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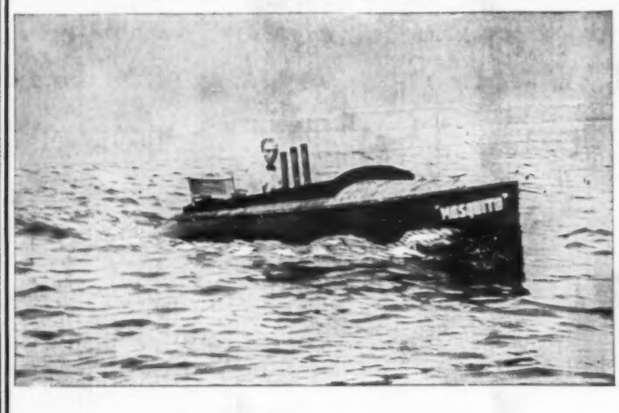

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